#### UNIVERSITÉ DE COPENHAGUE

CAHIERS DE L'INSTITUT DU MOYEN-ÂGE GREC ET LATIN publiés par le directeur de l'Institut

- 22 -

#### GEORGE AMARGIANAKIS

#### AN ANALYSIS OF STICHERA IN THE DEUTEROS MODES

The Stichera Idiomela for the Month of September in the Modes Deuteros, Plagal Deuteros, and Nenano Transcribed from the Manuscript Sinai 1230 (A.D.1365)

PART I

Copenhague 1977

To my wife Anastasia

A part of the printing costs of this issue of 'Cahiers' has been defrayed by the Greek State Scholarship Foundation

#### FOREWORD

The Chant of the Greek Orthodox Church has inherited from its past a strongly marked predilection for formulaic composition. Each musical genre has its own characteristic cadential formulas, its own typical progressions, and a number of introductory and connective elements or motifs which link the musical phrases together into a coherent and well structured melodic flow. No matter how thoroughly the melodies have developed and changed during more than 1000 years of written tradition, they still reflect their distant origin in musical practices and habits which were devised to regulate the cantillation and singing of liturgical texts. Behind the written tradition of Byzantine music lie certain ways of putting together the melodic elements — a real com-positional procedure, one might say — governed by rules which were never written down, but which we may still grasp through a careful analysis of the melodies.

The understanding of the compositional principles of the 'classical' Stikherarion style is one of the ultimate goals towards which George Amargianakis's investigations of a restricted number of Stikhera may eventually lead. His transcriptions and analyses, which the Institute for Greek and Latin Medieval Philology has decided to publish in its Cahiers, were submitted to the University of Copenhagen as a licentiate's dissertation in 1976, the fruit of more than two years of hard work. In my capacity of representing the Faculty of Humanities as Mr. Amargianakis's supervisor, I have had ample opportunity to follow the progress of his investigations.

As the reader will soon find out, these two fascicles of the Cahiers are first and foremost intended to be a working instrument, a point of departure for a deeper analysis of Stikheraric melodies in the E modes. Evidently, there remains a great deal of analytical work to be done before we really learn to understand and appreciate the compositional patchwork of such melodies; in this respect, Mr. Amargianakis's work is only the first — though perhaps the most important — step towards a final analysis, eminently well suited to fulfill its purpose. In fact, I can think of no better way to describe an overwhelming mass of details. The numerous indices and tables and lists of occurrences afford as many possibilities of approach as any reader might wish. And if the reader at times feels lost when

facing so many small variants so meticulously described, the recompense will be close at hand for those who follow the author's lead in tracking down one of his formulas. To anticipate critical remarks on the author's use of the term formula, I permit myself to say that Mr. Amargianakis has discussed with me the possibility of exchanging it with the more neutral word element - but this, in turn, had certain inconveniences which in the end made us keep to the somewhat misleading terminology originally chosen. It is my firm conviction that the tenacity which Mr. Amargianakis has displayed in preparing his transcriptions and analyses, will enable himself and his Greek and non-Greek fellow-students to deepen their understanding of the music of his church in the Byzantine period.

Jørgen Raasted

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#### PREFACE

In November 1973 when I participated in a seminar on Byzantine music my teacher Dr. Jørgen Raasted asked me to produce a musicological analysis of a melismatic melody of the Christmas Kontakion Ἡ παρθένος σήμερον. The analysis showed that the melody consisted of a limited number of formulas which, in proper combination, formed units, colons and sections corresponding to those of the text.

To me this discovery was of the greatest importance, although of course it was no real novelty. In fact several investigators of Byzantine music had made the same observation a long time ago and had stressed the need for systematic research in order to reveal the general principles that govern the composition of Byzantine melodies. 1

However, until now no one has undertaken this systematic research. And for obvious reasons: an investigation of this kind presupposes an enormous amassing of material from a large number of manuscripts such as cannot be performed except by team work over a long period of time.

After my first experience related above I felt a strong desire to carry out an investigation into the field. As my stay in Denmark was limited to two years Dr.Raasted and I agreed that I should start an investigation such as might be completed within this span of time.

The task was defined as follows: A transcription should be made of such melodies of the Stichera of the month of September as belong to the modes Deuteros, Plagal Deuteros and Nenano. The manuscript used for the transcription should be Sinai 1230 (Trapezus A.D. 1365). It should be investigated whether the melodies could be divided into formulas, and if this were proved possible

 a) analytic tables of the formulas should be produced and described in detail

<sup>1.</sup> See Egon Wellesz, A history of Byzantine music and Hymnography<sup>2</sup>, Oxford 1961,pp.325-329. Id.Eastern elements in Western chant, Copenhagen 1967, pp.88f. Christian Thodberg, Der byzantinische Alleluiarionzyklus, M.M. B, Subsidia vol.VIII,pp.140-143. Jørgen Raasted, Some observations on the structure of the Stichera in Byzantine rite, Byzantion vol.XXVIII (1958)pp.529-541.

The MS Sinai 1230 was chosen for two reasons: a) the melodies were easily legible, and 2) the number of errors is limited.

- b) the frequency of occurrence of each formula and its position in the melodies should be investigated
- c) the way in which formulas are combined to form units, colons and sections should be investigated
- d) the position of the signatures between the formulas should be determined and their role in the syntactic structure of the melodies studied
- e) the individual characteristics of the melodies should be defined and indications that the modes are chromatic should be studied.

Both for intrinsic reasons and because of the lack of precedents and an acknowledged terminology the investigation proved to be an arduous task. Several times I was at the point of giving up. Thanks, however, to by own persistence and the help offered by Dr.Raasted it finally reached completion.

The present study has set itself two goals: a) to set forth all the conclusions obtained in the course of the investigation, and b) to prepare materials for further investigation.

I would like to express in this place a warm thanks to the Greek Scholar-ship Foundation for its economic support during my post-graduate studies; to the Academy of Science of Athens which permitted me a 34 months' leave for the purpose of studies in Denmark, Germany and Switzerland. I further wish to express my gratefulness to Mr. Spyros Peristeris, who on the appointment of the Greek Scholarship foundation and in his capacity of musicologist followed the course of my post-graduate training with kind interest.

To the authorities of the University of Copenhagen which accepted my application for post-graduate studies and offered me all the facilities necessary for completing my research project I express my sincere gratitude.

I am particularly happy to have had as my supervisor Dr.Jørgen Raasted, Secretary General of Monumenta Musicae Byzantinae. Dr.Raasted not only offered me his neverfailing moral support in the difficulties that I met as a foreign student at the University of Copenhagen, but also provided invaluable help in the solution of the difficult problems that I had to face at various stages of my work. I followed all the courses and seminars he led during my training at the University of Copenhagen, and private talks with him opened new horizons for me in the investigation of Byzantine Music. For all this I want to thank him cordially and express my gratitude.

My sincere thanks are also due to Professor Christian Thodberg who together with Dr.Jørgen Raasted commended the acceptance of my thesis to the University of Copenhagen and who gave me good advice on how to improve it on certain points.

I further want to thank warmly the staff of the Institute of Greek and Latin Mediaeval Philology, and Professor Pinborg in particular, for their friendship, for the excellent working conditions which they offered me, and for their willing decision to publish my thesis in the 'Cahiers'.

Finally I wish to thank warmly my friend Sten Ebbesen for his kind help in improving the English of the present work.

# HOW THE MELODIES HAVE BEEN ANALYSED

The analysis of the melodies carried out in the present study is based on a division into formulas. I should like therefore to state at the very beginning that I use the term"formula" to denote a recurrent sequence of neumes, i.e. a string of signs which occurs several times in the material.

Quite often the same formula occurs in melodies belonging to different modes. This situation raises a number of questions which can hardly be answered at present. Are such formulas intermodal, or do they reflect partial modulations from one mode to another? And, if the present-day division into diatonic, chromatic, and enharmonic modes did already exist in the Middle Ages -which, as yet, is an unsettled question- one further complication arises, viz. that in modes which do not belong to the same genos, the same sequence of neumes may express different formulas, depending on the structure of their intervals. The nature of the problem will become clear if we consider a couple of examples:

Example 1:

b) Hxos 
$$\Pi\lambda$$
. A  $\pi\varepsilon$   $\pi\lambda\eta$   $\rho\omega$   $\tau\alpha\iota$  No. 63,8. a GF Ga FE D

To obtain a complete analysis of the melodies I have also used the term "formula"for those rare cases where a sequence of neumes occurs in only a single instance in my material.

<sup>2)</sup> In the modern system of Byzantine music the eight modes are divided into three classes (γένη), viz. the diatonic (Protos, Tetartos, Plagal Protos, Plagal Tetartos), the chromatic (Deuteros, Plagal Deuteros), and the enharmonic (Tritos, Barrys).

Example 2: (from the modern system of byzantine music).



- \*) Έωθυνόν θ΄, ἦχος Πλ.Α΄," ΄Ως ἐπ'ἐσχάτων τῶν χρόνων...." Αναστασυματάριον, ἔκδοσις "Ζωή", 'Αθῆναι 1972, σελ. 233.
- \*\*) Έωθινόν Ι΄, ήχος Πλ.Β΄, "Μετά τήν εἰς Αδου χάθοδον", αὐτόθι σελ.282.

In example No 1 case (a) we have the formula which in our division of the melodies into formulas is designated  $5A\alpha$ . This formula is found 18 times in the melodies under investigation, viz. twice in melodies of the Deuteros mode, 12 times in melodies of the Plagal Deuteros mode and 4 times in melodies of the Nenano mode. But the same formula, i.e. case (b), is also found on several occasions in melodies of the Protos and Plagal Protos modes. The only difference between (a) and (b) consists in that the first begins from E while the second begins from a.

The two formulas are exactly identical as to the contexture of the neumes and they would thus seem to constitute one formula shared by the two modes.

Now the question rises: Does formula  $5A\alpha$  in fact constitute a formula shared by the two modes, or does it introduce a kind of transformation (modulation)?

The answer can be derived from example No. 2.

In example No.2, cases (a) and (b) the two melodic lines which derive from the Plagal Protos and the Plagal Deuteros modes respectively show an absolute similarity as to the contexture of the neumes. In spite of their similarity, however, the acoustic result is entirely different, for in the first case the intervals are diatonic, in the second they are chromatic.

Three mutually exclusive conclusions can now be tentatively formulated, to explain the problems of Ex. No.1,

- a) Formula 5Aα is shared by the modes in question and consequently all the modes are diatonic.
- b) Formula  $5A\alpha$  belongs to the modes Deuteros, Plagal Deuteros and Nenano. When it occurs in the modes Protos and Plagal Protos it constitutes a modulation into the chromatic genus
- c) Formula 5Aα belongs to the modes Protos and Plagal Protos. When it occurs in the modes Deuteros, Plagal Deuteros and Nenano it constitutes a modulation in the diatonic genus.

It thus appears that as long as the problem of the chromatic and enharmonic modes remains unsolved it is not possible to state with certainty whether formulas that appear to be shared by modes of different genera are really so.

The combination  $\delta i$   $\alpha$  vol  $\alpha v$ , 11,7 constitutes a formula (1A $\alpha$ ) G aG FE E which in exactly this form occurs 34 times within the melodies under investigation. But the same formula is also encountered with slight variations due to the text, i.e. due to the number of syllables or to their accentuation.

In case (a) an extra syllable breaks up the combination of the two apostrophes into two separate apostrophes each having its own syllable.

In case (b) there are two extra syllables. Hence each apostrophe has its own syllable and the  $\pi$  is transformed into because more than two descending neumes follow.

In case (c) there is, on the one hand, an extra syllable and, on the other, the accent falls on the penultimate syllable. Hence the is transformed into a and the final apostrophe into a double apostrophe because of the accentuation of its corresponding syllable.

In case (d) there is an extra syllable in front of the accentuated one. Because of this the formula is extended by the combination \ added at the beginning.

The same formula may also be found in slightly deviant forms when it is combined with a following formula.

Thus:

Examples

Stavot av

GaGFE E

EFG

EFG

EFED

In all the above cases the formula, which is a cadential one, is transformed into a leading-on cadential formula in order to be combined with the following formula<sup>1</sup>.

In consequence of the above consideration the formulas were tabulated in such a way that Greek capital letters indicate variants due to the number of syllables and their accentuation, whereas Greek lower-case letters indicate variants at the end (or occasionally at the beginning) of a formula, by means of which the formula in question is connected with the following or preceding formula. It must, however, be observed that the above principle is not always followed slavishly: in order to avoid the creation of a large number of subdivisions I have sometimes used lower-case letters to indicate cases of variants

<sup>1.</sup> More examples of variations of formulas will be found in the analytical tables on p.p. 212f.

due to syllables and accentuation.

According to their position and function within the melodies the formulas may be:  $^{1}$ 

- a)  $\underline{\text{Opening}}$  when occurring at the beginning of melodies, sections, colons or units.<sup>2</sup>
- b) Medial when occurring between other formulas.
- c) <u>Cadential</u> when occurring at the end of melodies, sections, colons or units, thus forming various kinds of cadences.<sup>3</sup>
- d) Connective when occupying the position of a connective link between two sections, colons or units. Usually connective formulas are split into two parts the first of which is combined with the formula preceding it to form a leading on cadence, while the second is combined with the formula that follows it to form an opening group.

Thus:

In the above example formula  $9A\alpha$  is opening,  $1E\epsilon$  and  $8B\beta$  cadential,  $7A\beta$ ,  $16I\alpha$  and  $15B\beta$  medial. Formula  $10A\alpha$  is connective; it is split into two parts of which the first is united with  $1E\epsilon$  to form a leading-on cadence ( $E^F$ ), while the second is combined with  $11A\alpha$  to form an opening group.

The classification of the formulas into the above categories is by no means easy as the same formula, depending on its position within the melody, may be opening, medial, cadential, connective or opening and cadential at the same time.

Cf. Egon Wellesz, A history of Byzantine Music and Hymnography (2), Oxford 1961, p.327.

<sup>2.</sup> For these terms, see below pp. 16-17

<sup>3.</sup> The cadences are treated in a more detailed way on pp.60f.

As will be seen from the above examples formula No. 9 may be opening (case a), medial (case b), cadential (case c) or opening and cadential at the same time (case d).

According to the ways in which two formulas are connected they may be either <u>conjunct</u> when some part of the one forms a part of the other, or disjunct when there is no shared element. Thus:

In case (a) the two formulas  $13\Gamma$  and  $2A\beta$  are disjunct. In case (b) the note a, corresponding to the syllable  $\delta \epsilon (\lambda \epsilon \alpha \zeta \epsilon \tau \alpha \iota)$ , is shared by the two formulas  $15A\beta$  and  $2A\alpha$  which

thus become conjunct.

The above examples demonstrate why it is not possible to divide the formulas into the two categories of conjunct and

disjunct, as one and the same formula may be alternatively conjunct and disjunct depending on the type of formula with which it is connected.

In dividing the melodies into formulas two factors must be taken into consideration, viz. the text and the melody. This fact is often the cause of grave difficulties. Thus in case (a) the division of the melodic line into two formulas (137 and (2AB) is easily effected as the division will coincide with a word boundary in the text, viz. "ἐπαξίως // ἐκβοήσωμεν".

But in case (b) the division of the musical line into two formulas is more difficult as the division in the text," $\tau \bar{\phi}$   $\sigma \tau \alpha \upsilon \rho \bar{\phi} // \delta \epsilon \lambda \epsilon \dot{\alpha} \zeta \epsilon \tau \alpha \upsilon$ " does not coincide completely with the melodic division, since formula 15AB extends until the first syllable of the second word, and this syllable thus constitutes a musical sound shared by the two formulas. And in case (c) the division becomes very difficult indeed. The text allows either of two divisions:"

"εὐλόγησέ σε // κύριος" or "εὐλόγησέ // σε κύριος"; but the melody indicates the syllable (εὐλο) <u>γη</u> as the point of division because that is where formula 13Γ ends. In such cases where a complete correspondence is lacking between textual and melodic divisions we have for practical reasons preferred to follow the division indicated by the melody.

One, two or more interconnected formulas make up a <u>unit</u>. One, two or more units taken together make up a  $\underline{\text{colon}}$ . One, two or more colons make up a section.

In the above example the first line which consists of two conjunct formulas makes up a unit. Similarly the second line, which consists of two disjunct formulas, makes up a unit. Taken together the two lines make up a colon. The third line, which consists of five conjunct formulas, also makes up a unit, which in this case may be considered as constituting a colon. The two colons together make up a section.

Unit, colon and section all begin with a characteristic opening formula and end with a characteristic cadential or leading-on cadential formula.

The units and the colons have been named from their cadences, whether they be real cadences or leading-on cadences. Thus, a colon on E is one which ends with a cadence on E or a leading-on cadence on  $E^D, E^F$  or  $E^G$ . In general, we find units ending on D,E,G,a,b,d and colons on D,E,G,b but sections only on E, in all three modes.

In some cases a single unit constitutes a colon and a single colon will in some cases constitute a section.

#### DESCRIPTION OF THE FORMULAS

The segmentation of the melodies produced 72 different formulas occurring with varying frequencies ranging from 1 (20 formulas) to 245.

The description of each formula contains the following information:

- a) the kind of formula it is (opening, cadential, medial, connective)
- b) the position it occupies in the melody (e.g. at the beginning of a melody, section, colon, or unit).
- c) the kind of cadence it forms (on E, on G, on b and so on).
- d) the signatures if any  $(\ddot{y}, \dot{\pi}\ddot{y}, \dot{u} = \vec{z})$  that precede or follow it.
- e) the musical punctuation if any, that follows (dot, comma) $^{1}$
- f) the grammatical punctuation (dot, high point, comma)<sup>2</sup>.

  Further explanations are only given when special circumstances make them absolutely mecessary.

The signatures and the musical punctuation were found to have an intimate connection with the segmentation of the melodies into sections, colons and units, and so it was considered advisable to provide the relevant information.

<sup>2.</sup> The musical manuscript does not contain any grammatical punctuation. It was taken from the edition Μηναΐα τοῦ ὅλου ἐνιαυτοῦ, Τόμος Α΄(Σεπτέμβριος-'Οκτώβριος), Rome 1888. Information about the grammatical punctuation has been given in order to show its relation to the musical punctuation.

#### Formula No. 1

178 cases. Distribution:

- A. Cadential. 176 cases (+2 cases mentioned sub B).
- B. Opening and cadential. 2 cases. Details:
- A.a At the end of melodies or of sections of melodies at such points where the text carries a full stop, a high point(') or a comma<sup>1</sup>
- A.b In 38 out of 178 cases it is combined with such formulas as 4Eα,10(Aα,Bα,Bβ,Γα,Γβ) and 32A (which can be considered as substitutes for MeInt) and form leading-on cadences.
- A.c In the cases in which it is neither at the end of a melody nor forms a leading-on cadence it is followed by a MeSi
- A.d In all cases the above formula is also followed by a dot.
- A.e It is a characteristic cadential formula on E in all three modes.
- B.a At the beginning of the last unit of an E colon (79,22).
- B.b At the beginning of a section preceded by a leading-on cadence on E<sup>F</sup> (84,14).

#### Formula No. 2

102 cases. Distribution: A. Opening 3 cases (+10 cases mentioned sub C).

B. Cadential 85 cases (+10 cases mentioned sub C).

C. Opening and cadential 10 cases.

D. Medial 4 cases.

Details:

A.a At the beginning of G colons, preceded by a cadence on  $G+\ddot{4}(68,2)$ , or by a leading-on cadence on  $E^{D}(88,12)$ .

<sup>1.</sup> For further details see pp. 62-63

<sup>2.</sup> A MeSi after a leading-on cadence is found in only one instance (3,9).

- A.b At the beginning of the last unit of G colons (12,7.24,4. 57,6.79,6.81,15.90,2.95,10.110,8).
- A.c At the beginning of the last unit but one of E colons (72,17.81,12.84,8).
- B.a Cadences on G in all three modes (87 cases). There always follow both a dot and a MeSi, viz. $\ddot{y}$ ,  $\ddot{y}$ ,  $\ddot{y}$  with the exception of five cases (12,9.28,7.65,2.104,4.110,9).
- B.b In five cases (3,4.92,4.102,19.106,7.106,15) formula 2 is combined with 33A to form a cadential group on G. Both a dot and the MeSi  $\ddot{y}$  follow.
- B.c In one case (35,5) it is combined with the formula 17N $\gamma$ , the combination becoming a leading-on cadence on E<sup>F</sup>. No MeSi follows.
- B.d In three cases it is modified at the end and transformed into a leading-on cadence on  $\underline{a}$  (12,4.24,10.36,10). No MeSi follows.
- C. 12,7.24,4.57,6.68,2.79,6.81,15.88,12.95,10.110,8.
- D. 34,5.38,9.38,10.81,8.

# Formula No. 3

a b a b G

- 50 cases. Distribution:
- A. Opening 39 cases.
- B. Medial 11 cases.
   Details:
- A.a At the beginning of the last unit of E colons. There is no preceding MeSi (3,11.12,5.13,3.13,6.24,11..in all 36 cases).
- A.b At the beginning of one-line colons preceded by a cadence on G +MeSi $\ddot{y}$  (12,8.21,3.111,9). Formula 3 then begins on G instead of a . Thus

Here it might be considered a conjunct group of two formulas,  $viz.9\Gamma\alpha+3A$ .

B. 11,13/14.16,6.29,12/13.38,5/6.48,10.84,22.95,15/16.97,15. 103,2.103,18.111,1/2.

Formula 3 is invariably followed either by the cadential formula No. 1 or by the cadential group 16+1.

#### Formula No. 4

The number 4 has been assigned to all the various types of thematismoi ( $\vartheta \epsilon \mu \alpha \tau \iota \sigma \mu \circ \iota'$ ), viz.

For further details see pp. 75-76.

#### Formula No. 5

38 cases. Distribution:

A. Opening 1 case (+15 cases mentioned <u>sub</u> D).

B. Medial 1 case

C. Cadential 20 cases (+15 cases mentioned <u>sub</u> D).

D. Opening and cadential 15 cases
Details:

- A.a At the beginning of sections which are preceded by cadences on E+MeSiny (16,7.38,7.51,11.64,12.90,7.92,10.106,10.111,10.).
- A.b At the beginning of sections or colons which are preceded by a leading-on cadence on E<sup>D</sup>. In these cases formula 5 is joined to formula 57, the combination 57+5 becoming an opening group (21,8.22,2.69,3.78,5). The opening group 57+5 is also found at the beginning of a melody (69,1) in which case it is preceded by the MSi  $\pi$
- A.c At the beginning of units which are preceded by cadences on E. There is no preceding MeSi (23,2.111,3).

<sup>\*</sup> The asterisk indicates that there is a variant written in red ink above the regular formula. These variants are included in the number of occurrences.

- B. 65,4.
- C.a At the end of D colons, followed by a dot and the  $_{MeSi}$  $\widehat{\eta g}$  (18,3.55,4.84,3.84,17.88,20)
- C.b At the end of D colons, followed by a dot but not by a MeSi (23,2.23,9.44,17.68,4.78,10.83,4.90,11). The reason is probably that there is a textual enjambement.
- C.c At the end of the last unit but one of E or G colons. Neither a dot or a MeSi follows (21,8.22,2.48,12.51,11.56,12.64,12.69,1.69,3.72,12.78,5.90,7.92,10.111,10.-21,1.16,7.38,7), except in three cases (21,1.72,12.9) where a dot follows.
- C.d In one case it is combined with formula  $10 \, \text{Ay}$  to form a leading-on cadence on  $\text{E}^{\text{F}}$  (106,10).
- C.e In one case (68,15) its final is transformed so as to end on E instead of D.
- D. 16,7.21,8.22,2.38,7.51,11.64,12. 69,3. 78,5.90,7.92,10.69,1.106,10.111,10.23,2.

This formula occurs 8 times in melodies of the Deuteros mode, 21 times in melodies of the Plagal Deuteros mode and 9 times in melodies of the Nenano mode. These figures demonstrate that it is especially appropriate to the plagal Deuteros mode. The same formula is furthermore encountered in melodies of the Plagal Protos and Plagal Tetartos modes (M.M. B.Tr.I.Sept.1,8.1,12.1,15.8,2.8,5.15,13.26,17.52,5.52,9.62,7.-10,5). Whether formula 5 is common to the modes named is a question that can hardly be settled at present, as the problem of the chromatic modes remains unsolved.

## Formula No. 6

E FE D

60 cases. Distribution:

A. Opening 19 cases

B. Medial 10 cases

C. Cadential 31 cases
 Details:

A.a At the beginning of sections or of E colons. A cadence on E+MeSi $\pi \ddot{y}$  precedes (28,11.33,6.49,8.64,10.66,2.69,10.69,12). There are only two instances (28,6.69,12) without

any preceding MeSi.

- A.b At the beginning of the last unit or the last unit but one of E or G colons, after cadences on E,D,Ga. No MeSi precedes (21,13.48,4.48,10.49,17.50,2.50,5.79,3.84,6.84,11.88,691,9).
- B. 14,5.36,1.49,10.49,11.50,8.64,4.64,9.79,5.102,32
- C.a At the end of the last unit but one of E or G colons. In these cases there is no following musical dot nor MeSi if there is a textual enjambement (21,17.27,10.33,5.34,9.37,2.37,16.49,13.72,8.95,7.95,14.102,27.103,7.106,4.111,4.-72,5.79,13). But when there is no enjambement a dot follows (97, 11.103,17.—67,6). There is only one exception to the above rule, viz. 11,6, where a dot follows in spite of an enjambement.
- C.b At the end of D colons. Both dot and the MeSi $\eta g$  follow (56,9.56,17.91,14.103,12.106,14).

In 5 cases formula 6 is not followed by any MeSi although it is at the end of D colons (17,8.37,15.54,9.84,24.88,13). The reason is probably that there is a textual enjambement.

Formula 6 occurs 17 times in melodies of the Deuteros mode, 38 times in melodies of the Plagal Deuteros mode and 5 times in melodies of the Nenano mode.

The same formula is also encountered in melodies of the Protos and Plagal Protos modes (M.M.B.Tr.I.Sept.1,13.2,11.2,12.15,9.15,10.41,9.41,12.47,4.99,10.etc.)

# Formula No. 7

نهون a be G

168 cases. Distribution:

A. Opening 89 cases

B. Connective 12 cases

C. Medial 67 cases

Details:

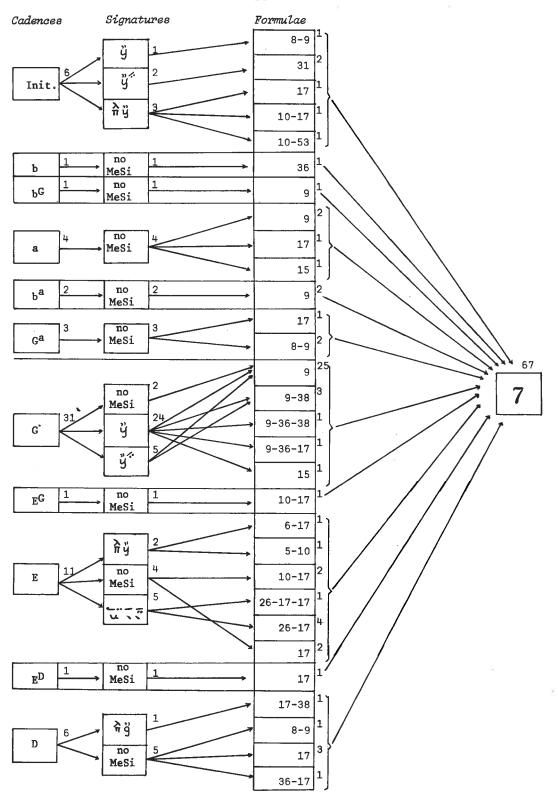
- A.a At the beginning of melodies. Preceded by  $\eta y = (16,1.88,1.10,1)$  or  $\eta'(28,1)$ .
- A.B At the beginning of sections. In these cases it is the

  MeSi that is used if it is preceded by a cadence on E

- (14,3.18,10.35,8.35,13.72,14), whereas it is the MeSi if it is preceded by a cadence on  $E^a$  (36,4.49,10.65,6.68,14 81,11). There is only one instance where a MeSi is lacking under such circumstances (37,4).
- A.c At the beginning of a colon which has a cadence on G before it. A MeSi precedes, either  $\ddot{y}$  (35,10.51,6) or  $\ddot{y}$  (21,17.50,8.106,14).
- A.d At the beginning of a unit which is preceded either by a cadence on D or <u>a</u> or by a leading-on cadence on D<sup>a</sup>, G<sup>a</sup> or a. There is no preceding MeSi(48,13.37,17,-17,8.54,11.81,6.-72,9.103,8.-12,12.-56,17.72,18....in all 65 cases).
- B. Between the last but one and the last unit of E colons. In these cases it is divided into two parts the first of which is combined with the formula preceding it to form a leading-on cadence on G<sup>a</sup> while the second part is combined with the formula that follows to form an opening group (3,7/8.16,9/10.22,10/11.24,20/21.27,9/10.44,16/17.44, 18/19.84,12/13.92,12/13.95,2/3.106,16/17.111,10/11).
- C. In these cases it is preceded by one or more formulas the number and kind of which depend on the preceding cadence (3,3.4,9.11,2.18,9.21,12.28,8.66,11....in all 67 cases). The figure on the next page may convey some idea of the combination in question.

Formula No 7 is followed by such formulas as, e.g.16(151 cases)  $10(\Delta \alpha, Z\beta, Z\gamma, Z\delta, Z\epsilon)(15 \text{ cases})$ ,  $6\Delta\alpha(1\text{case})$ ,  $11\Gamma\vartheta(1\text{case})$ ,  $53\Delta\beta(1 \text{ case})$ .

This is one of the most characteristic and most frequent formula of all three modes.



#### Formula No. 8

112 cases. Distribution:

Α. Opening 15 cases

Medial В. 8 cases

С. Cadential 85 cases

D. Connective 4 cases Details:

- A.a At the beginning of melodies of the Deuteros Mode. ded by the MSi  $\ddot{q}^{*}(11,1.14,1.17,1.24,1.55,1.81,1.102,1)$ .
- A.b At the beginning of sections. Preceded by the MeSi (54.12) ore; -(83,3).
- A.c At the beginning of the last or the last but one unit of E or G colons. No preceding MeSi (12,11.13,10.17,9.29,7 29,12.91,4).
- B. 22,9.38,10.44,2/3.81,16.84,16.95,6.102,11.102,12.
- C.a Cadences on G. (3,6.11,5.13,1.13,8.14,10.22,8...in all 34 cases). A musical dot follows (except in three instances, viz. 84,21.91,20.111,8) and also a MeSi viz. " or " (except in four instances, viz. 9,3.24,18.84,21.103,9).
- C.b In four cases the formulas 8 and 33A are combined to form a cadential group on G. A musical dot and a MeSi, viz.ÿ or  $\ddot{y}$ , follow (21,11.34,13.35,9.95,12).
- C.c Leading-on cadences on Ga. This result is obtained by adding a tail at the end, as, e.g. Gaa, Gaba, Gaa, G a a G  $\tilde{a}$  (29,6.34,14.-3,10.3,14.-37,10.-21,6.78,15.-24,20.84,12...in all 40 cases.
- C.d Leading-on cadences on G obtained by the combination 8+24  $(A_{\gamma}, A_{\delta}, B_{\alpha}). (16, 2.78, 9.91, 3.91, 19.97, 7).$
- C.e Leading-on cadences on  ${\sf G}^{\sf b}$  obtained by the combination 8+11  $(\Gamma\beta, \Gamma\gamma)$  (14,9.54,2).
- C.f In cases c.d.e no MeSi follows
- As a connective formula it forms leading-on cadences on  $\underline{a}$ in 4 cases (22,9.56,22.81,15.95,11).

#### Formula No. 9

184 cases. Distribution: G a bc b a

A. Opening 145 cases (+5 cases mentioned sub D)

B. Medial 17 cases

C. Cadential 17 cases (+5 cases mentioned sub D)

D. Opening and Cadential 5 cases
Details:

A.a At the beginning of E colons when preceded by:

- 1) a cadence on G+the MeSi  $\ddot{y}$  or  $\ddot{y}^*$  (3,5.3,7.13,9.36,6.68,8. in all 88 cases. In 9 cases, however, no MeSi precedes:
- (9,4.12,10.28,8.29,6.65,3.84,26.95,6.104,5.110,10)
- 2) a cadence on E+MeSi y (69,8) or ny (69,6).
- 3) a cadence on D+MeSi $\ddot{y}$  (72,2); no MeSi(34,2).
- A.b At the beginning of G colons. Preceded by a cadence on G+ MeSi  $\ddot{y}$  or  $\ddot{y}^{<}$  (14,9.44,8.19,19.104,2.in all 19 cases. In one case, however, there is no preceding MeSi (110,9).
- A.c At the beginning of D colons. Preceded by a cadence on G+ MeSi  $\ddot{q}$  or  $\ddot{q}$  (37,13.54,8.56,8.56,16.78,9.84,16.91,4).
- A.d At the beginning of a b colon. Preceded by cadence on G+ MeSi $\ddot{y}$  (22,6).
- A.e At the beginning of G,E or D colons which are preceded by a leading-on cadence. In such cases no preceding MeSi occurs (29,4.37,10.51,4.54,25.56,7.—84,15.—4,3.54,16.54,21.66,5.67,2.90,6.95,2.102,26.—55,3).
- A.f At the beginning of the last or the last but one unit of E or G colons. No MeSi precedes (27,3.66,11.-37,12.91,20... in all 15 cases.
- B. 17,9.29,7.68,12.79,5.91,7.92,7...in all 17 cases).
- C. At the end of the last unit but one of E colons (4,10.24, 15.38,2... in all 15 cases), of a G colon (57,5), of a D colon (102,12).
- D. 14,11.27,9.54,3.55,14.56,22

#### Formula No. 10

EF D G

150 cases. Distribution:

A. Opening 65 cases
B. Medial 32 cases

C. Cadential 2 cases (+51 cases mentioned <u>sub</u> D)

D. Connective 51 cases

Details:

- A.a At the beginning of melodies of the Deuteros mode. Preceded by the MSi  $\ddot{y}$  (27,1.29,1.44,1.103,1).
- A.b At the beginning of melodies of the Plagal Deuteros mode. Preceded by the MSi $\hat{n}\ddot{y}$  or  $\hat{n}\ddot{y}$  or  $\hat{n}\ddot{y}$  (22,1.23,1.33,1.36,1.37, 1.38,1.65,1.66,1.78,1.95,1).
- A.c At the beginning of sections. Preceded by the MeSi $\hat{\pi}$ y or  $\hat{\pi}$ y (12,6.13,4.24,7.24,12.34,4.38,3.48,11.54,5.54,19.67,4.97,13. In only one case,viz. 49,15,there is no preceding MeSi.
- A.d At the beginning of sections, colons or units. Preceded by the thematismos thes-kai-apothes, i.e. formula No. 4E  $(\alpha,\beta,\gamma).(3,4.4,7.11,11.17,6...$ in all 28 cases).
- A.e At the beginning of colons or units. No MeSi precedes. (23,10.33,2.33,3.64,6 in all 11 cases).
- B. 9,8.11,8.14,3.14,7.16,1.18,10...in all 32 cases.
  In these cases formula 10 could be considered connective and we could divide the verse into two units as follows:

In the above example it would be possible to divide the verse into two units with a leading-on cadence E<sup>F</sup> at the end of the first unit. However, I have avoided doing so as this would destroy the coherence of the text.

- C.a Cadence on D (22,11) or leading-on cadence on D<sup>a</sup> (102,9) at the end of the last unit but one of E colons.
- C.b Here one ought to include also the cases where the formula is connective and forms leading-on cadences on  $E, E^D, E^F$ .
- D.a Between two sections the first of which has a termination of one of the following kinds:  $1[A(\beta,\gamma,\epsilon),B\gamma,\Gamma(\zeta,\delta),\Delta(\delta,\zeta),$  $E(\beta,\epsilon,\zeta),Z\gamma],16(\alpha,\delta),44(\alpha,\beta).$

In these cases the connective formula No. 10 is divided into two parts the first of which is combined with the end of the preceding section to form a leading-on cadence on  $E^F$  or on  $E^D$ , whereas the second is combined with the beginning of the following section to form an opening group together with its opening formula.

In all these cases there is a musical dot between the two sections, but there is never -save for one instance (3,8/9)-any MeSi. (3,5/6.3,8/9.3,11/12.16,3/4.17,2/3.21,9/10... in all 33 cases.

D.b Between two units or colons, normally at the beginning of a section, the first unit having a cadence of one of the following kinds:  $1(\Delta n, E\epsilon, H\beta)$ .  $5\Gamma\gamma, 7(A\delta, \Gamma)$ .  $10E\gamma, 16(\Delta\delta, Z\gamma, \hbar\alpha, M\delta, \Xi\delta)$ , 27B, 28,  $52A\beta$ . In these cases a leading-on cadence  $(E, E^D, E^F)$  results at the end of the first unit and an opening group is formed at the beginning of the second. If the text carries a grammatical comma between the two units, or if, at least they can be separated without doing violence to the sense, then a musical dot is put between the two units. Otherwise there is none. (51,3/4.55,2/3.56,6/7.-12,6/7.27,3/4.35,1/2... in all 18 cases).

#### Formula No. 11

58 cases. Distribution: G ab b

A. Opening 14 cases (+4 cases mentioned sub D)

B. Medial 7 cases

C. Cadential 34 cases (+4 cases mentioned sub D)

D. Opening and cadential 4 cases
Details:

- A.a At the beginning of melodies of the Deuteros mode, preceded by the MSi  $\ddot{y}$  (4,1.54,1).
- A.b At the beginning of colons after cadences on G+MeSi  $\ddot{y}$  (24,18.27,5.38,9.38,10.44,14.102,12) or cadences on D+MeSi  $\ddot{y}$  (34,13), or leading-on cadences on E without any MeSi (44,6.102,3)
- A.c At the beginning of the last unit of G colons. No preceding MeSi (38,4.38,8).
- A.d At the beginning of a section which is connected to the one preceding it by means of a connective formula, viz.

  10(Aa,BB). In such cases the second part of the connective formula combines with formula 11 to constitute an opening group. There is no preceding MeSi except for one instance

- (3,9) in which the MeSi  $\ddot{y}$  precedes. (3,6.3,9.17,3.78,13. 106,12).
- B. 3,13.11,5.17,1.24,1.90,5.102,1.102,11
- C.a Cadence on b. A musical dot and the MeSi y follow (57,1)
- C.b Cadences on b. Neither musical dot nor MeSi follow. (3,6. 18,6.29,1.97,5...in all 19 cases).
- C.c Leading-on cadences:
  - 1) on b (3,1.18,138,3....in all 8 cases)
  - 2) on b or  $b^{C}$  by addition of formulas such as  $15(A\delta,B\alpha)$ . 24,7.54,12.56,1.92,1.
  - 3) on  $b^a$  by addition of formula 30A(11,1)
  - 4) on b<sup>d</sup> by addition of formula 4Z (103,3)
  - 5) on  $G^b$  when formula 11 is added to formulas such as  $7B\gamma$ ,  $8B\alpha$ ,  $17B\alpha$ , 33A, so as to form cadential groups (35,4.54,2.102,29).
- C.d In the cases mentioned above <u>sub</u> C.b and C.c formula 11 is found at the end of the first unit of G colons (22 cases, E colons (11cases) and b colons (4 cases) which—save for three cases (14,9.35,4.65,8)—occur at the beginning of sections.
- D. 3,6.44,14.78,13.106,12.

#### Formula No. 12

G b a G

- 41 cases. Distribution:
- A. Opening 15 cases (+6 cases mentioned sub D)
- B. Medial 15 cases
- C. Cadential 5 cases (+6 cases mentioned sub D)
- D. Opening and cadential 6 cases

  Details:
- A.a At the beginning of melodies of the Deuteros mode. Preceded by the MSi y (3,1.12,1.56,1.57,1.92,1).
- A.b At the beginning of E or D colons after cadences on G + MeSi  $\ddot{y}$  (16,9.29,11-44,16.68,3).
- A.c At the beginning of E,G or b colons (3,12.33,11.48,5.66,7.79,5.97,9.110,5) or at the beginning of the last unit but one of E colons (38,2), when a leading-on cadence  $E^F$  or  $E^D$  formed by means of connective formulas such as 10A $\alpha$ ,

- $B(\alpha,\gamma,\delta)$ ,  $\Gamma(\alpha,\beta)$  precedes. In these cases the second part of the connective formula combines with 12 to form an opening group.
- A.d At the beginning of E or G colons, after leading-on cadences on b, ba, or a (17,11.55,12.-57.5), or at the beginning of the last unit of an E colon, after a leading-on cadence on a (54,22).
- B. 4,7.11,11.13,4.14,1.24,7.27,1.24,12...in all 15 cases.
- C.a Cadences on G (4,3.55,12.88,18). Neither a musical dot nor a MeSi follow. There is just one case in which a musical dot follows (4,3).
- C.b Leading-on cadences on G<sup>a</sup>(3,12.12,11.13,10.16,9.17,11.
   29,11.44,3.44,16). No musical dot follows, nor any MeSi.
- D. 3,12.16,9.17,11.29,11.44,16.55,12

#### Formula No 13.

# 13 23

55 cases. Distribution:

A. Opening 30 cases (+3 cases mentioned as sub D)

B. Medial 7 cases

C. Cadential 15 cases (+3 cases mentioned as sub D)

- D. Opening and Cadential 3 cases
   Details:
- A.a At the beginning of G,E or b colons after cadences on b+ MeSi $\pi \ddot{y}$  or on G+MeSi $\ddot{y}$  on E+MeSi $\ddot{s}$  or on D+MeSi $\ddot{y}$  (11,12. 18,11.29,10.36,9.55,10.65,7.—106,7.—13,7.—29,15)
- A.b At the beginning of G or E colons after cadences on b(16,5.49,3.92,12.104,4.110,6).
- A.c At the beginning of the last unit of G or b colons with a preceding cadence on b(11,9.18,7... in all 10 cases) or on G(103,10) or d(17,10) or on E(91,18); Also with preceding leading-on cadence on G<sup>b</sup>(54,2), or on b<sup>G</sup>(24,2), or on G<sup>a</sup>(3,12.55,9.57,4).
- A.d At the beginning of the last unit but one of a b colon after a cadence on b(29,2).
- B. 16,5.17,10.27,2.28,7.38,4.56,2.102,11.
- C.a Cadence on b. Followed by a musical dot and the MeSi $\hat{\pi}\hat{y}$  (55,9).

- C.b Cadences on b at the end of the last unit but one of G colons (13,7.97,1). In one of the two instances a musical dot follows (97,1).
- C.c Leading-on cadences on b(3,12.11,4.55,11.56,3.66,4.68,11. 104,2). A musical dot follows except in one instance(66,4).
- C.d Leading-on cadences on  $b^a$  formed by adding to formula 13 such as  $30(A,B\alpha)(4,2.29,3.37,8.37,9.54,20.54,24.57,4)$ .

  A musical dot follows except for one instance(54,24).
- C.e Leading-on cadence on b formed by the addition of formula  $15A\delta(54,14)$ . A musical dot follows.
- C.f In the cases falling under C(b,c,d,e) no MeSi ever follows.
- D. 3,12.55,9.57,4.

#### Formula No. 14

26 cases. Distribution:

A. Opening 15 cases

B. Medial 9 cases

C. Connective 2 cases
 Details:

- A.a At the beginning of G,E and D colons after cadences on G+MeSi  $\ddot{y}$  (11,6.27,7.84,24,106,4).
- A.b At the beginning of the last or last but one unit of b,G,E and D colons. No MeSi precededs.(3,2.27,2.27,8.29,3.37,8.37,11.37,15.56,2.56,3.66,4.92,2).
- B. 11,4.37,9.54,14.54,20.54,24.55,11.68,11.97,1.104,2.
- C. Between two units forming a leading-on cadence on  $G^a(3,12.55,8/9)$ .

## Formula No. 15

69 cases. Distribution: b cb a

A. Opening 37 cases

B. Medial 22 cases

C. Cadential 5 cases (+5 cases mentioned sub D)

D. Connective 5 cases

D Details:

- A.b At the beginning of G or D colons preceded by a cadence on b+MeSi $\hat{\pi}\hat{y}$  (21,11.88,17) or on E+MeSi  $\hat{y}$  (65,2.84,2).
- A.c At the beginning of an E colon preceded by a leading-on cadence on b(103,2).
- A.d At the beginning of b colons preceded by a cadence on b+ MeSi $\pi \ddot{y}$  (4,2).
- A.e At the beginning of F or G or b colons preceded by a cadence on b(44,9.68,11.72,11.84,21.90,9)
- A.f At the beginning of the last unit of G,b,D colons. No MeSi precedes. (14,10.21,14.44,15.54,7...in all 14 cases).
- A.g At the beginning of the last but one unit of E colons. No MeSi precedes. (35,5.37,5.51,15.102,8.102,17.102,30).
- B. 3,9.3,13.4,1.11,5.13,8.14,4.17,1.17,3...in all 22 cases).
- C.a Cadences on a at the end of the first or second unit of E colons (12,1.12,2.44,1).
- C.b Leading-on cadences on  $b^G$  at the end of the first unit of E or G colons (102,1.-24,1).
- C.c Leading-on cadences on b or bc in the cases where formula 15 is connective (5 cases).
- D. 24,7/8.54,12/13.54,14/15.56,1/2.92,1/2. The distinction of the various types of formula 15 caused no little difficulty due to its similarity to formula No.9. Thus:

In the two above examples formula  $9\Delta\epsilon$  and formula  $15E\gamma$  are exactly alike. Nevertheless I consider them different for the following reason:

Formula 9 represents the melodic movement <u>G a b c b a</u> which presupposes a preceding cadence on G. When, as in the above example (a), the text of the formula begins with a stressed syllable, the sounds <u>Ga</u> are often omitted and the formula takes the shape of <u>b c b a</u> [see formulas  $9\Delta(\alpha,\beta,\gamma,\delta,\epsilon)$ ]. In these

cases the sounds <u>Ga</u> which are omitted are nevertheless understood, both because of the preceding cadence on <u>G</u> and because of the preceding MeSi  $y^{<}$ , when there is one.

Formula 15 represents the melodic movement  $\underline{b}$   $\underline{c}$   $\underline{b}$   $\underline{a}$  which presupposes a preceding cadence on  $\underline{b}$  or some neighbouring sound like  $\underline{a}$  or  $\underline{d}$  for instance, which prepares for the sound  $\underline{b}$ . In cases where a cadence on  $\underline{E}$  precedes (example  $\underline{b}$ ) the preparation for the sound  $\underline{b}$  is provided by one of the following MeSi:  $y^*$ ,

My attribution of doubtful instances to formula 9 or 15 was based on considerations such as the above.

#### Formula No. 16

This formula sometimes ends on E and sometimes on G depending on the following formula or the cadence that it tends to form.

245 cases, Distribution:

- A. Opening 32 cases (+2 cases mentioned <u>sub</u> D)
- B. Medial 137 cases
- C. Cadential 74 cases (+2 cases mentioned sub D)
- D. Opening and Cadential 2 cases
  Details:
- A.a At the beginning of melodies of the Plagal Deuteros mode. The MSi $\pi$ " precedes (9,1.48,1).
- A.b At the beginning of sections. Unless a leading-on cadence precedes there will be a preceding MeSi, either  $\frac{\lambda}{n}$  or  $\frac{\lambda}{n}$  y. (9,3.9,5.11,8.11,8.22,4.23,8.23,8.51,13.56,20.-102,29).
- A.c At the beginning of a G colon. A cadence on G+MeSi  $\ddot{y}$  precedes (35,15).
- A.d At the beginning of units after cadences on E or D or a or Ga. No MeSi precedes (12,3.16,3.17,11.23,1.23,4.34,10.51,7.67,3.88,15.102,15).
- A.e At the beginning of units as an opening group when preceded by the connective formula No.7(3,8.16,10.24,21.27,10.44,17.44,19.84,13.92,13.95,3.106,17.111,11).
- B. 11,2.14,5.23,9.24,16.37,17....in all 137 cases.
- C.a Cadences on E:

- 1) at the end of melodies or sections at points where the text has a full stop, a high point or a comma. A musical dot follows and also one of the following MeSi  $\hat{\pi}\hat{y}$ ,  $\hat{\pi}\hat{y}$ , except for one case in which the formula is found at the end of a melody and is followed by the finis-sign: (9,4.14,6.22,3.28,10.48,2.48,8.-67,9... in all 19 cases).
- 2) At the end of prologues. Followed by a musical dot and the MeSi $\pi \ddot{y}$  or  $\ddot{y}^*$  (65,1.66,1.84,1).
- 3) At the end of E colons occurring at the beginning of sections. A musical dot and the MeSiny or follow (79,19. 91,11.111,6).
- 4) At the end of the last unit or the last but one of E,G or D colons. No MeSi followes. (4,9.21,12.21,15.23,1.28,8...in all 22 cases).
- C.b Cadences on G. A musical dot and the MeSi  $\ddot{y}$  follow(33,7. 38,9.51,4).
- C.c Leading-on cadences on  $F^F$ ,  $E^D$  or  $E^G$  formed by the addition of a formula like  $4E(\alpha,\beta)$ ,  $10 \left[ A\alpha,B(\beta,\gamma,\delta),\Gamma\alpha \right]$ , 32A:
  - 1) At the end of sections at such points where the text has a full stop, a high point or a comma. A musical dot follows (48, 4.72, 16.78, 4.78, 12.90, 7.102, 6.102, 18.102, 22.106, 11).
  - 2) At the end of prologues. A musical dot follows (22,1.28,1.78,2.106,2).
  - 3) At the end of the first unit of G or E colons(17,5.35,10. 35,13.51,13.66,6.72,14.81,14). A musical dot follows in one case only(66,6).
- C.d Leading on cadence on  $G^F$  linked to the end of formula  $2A\alpha$ . A musical dot follows (35,3):
- C.e Cadences on a or leading-on cadence on a or G<sup>a</sup> (34,5.34,7.72,12.102,32).
- D. 23,1.51,13.

#### Formula No. 17

<u>ت</u> بين

D EF a

185 cases. Distribution:

A. Opening 91 cases

B. Medial 77 cases

- C. Cadential 17 cases.
   Details:
- A.a At the beginning of melodies of the Plagal Deuteros mode; preceded by the  $MSi \tilde{\pi} \tilde{y}^*$  (35,1.49,1.84,1).
- A.b At the beginning of sections or colons; preceded by the MeSi  $\tilde{\pi}\ddot{y}$  (12,4.12,9.24,14...in all 18 cases) except for the instance(111,8), and two cases(95,4 102,19) in which a leading-on cadence precedes.
- A.c After cadences on D(9,2.11,7.16,8.21,2.21,9...in all 45 cases). In 11 of these cases the MeSi $\pi$  $\ddot{g}$  precedes(9,8.18,4.55,5.56,10.56,18.84,4.84,18.88,21.91,15.102,14.106,15).
- A.d At the beginning of the last unit of E colons, after leading-on cadences on a or G<sup>a</sup>. No MeSi precedes (21,7.23,11.34,3.49,7...in all 16 cases).
- A.e At the beginning of the last unit or of the last but one of E or G colons, after cadences on E. No MeSi precedes (21,16.28,9.37,2...in all 10 cases).
- B. 4,6.9,3.9,5.12,6.14,8.21,13.22,1...in all 77 cases.
- C. Cadences on a or leading-on cadences on G<sup>a</sup> at the end of the last unit but one of E colons(9,8.11,2.14,5.23,10...in all 17 cases).

It is significant that formula 17 is found 55 times in melodies of the deuteros mode, 107 times in melodies of the Plagal Deuteros mode and 23 times in melodies of the Nenano mode. These figures show that the formula fits the melodies of the Plagal Deuteros and Nenano modes best.

#### Formula No. 18

37 cases. Distribution:

A. Medial 7 case

- B. Cadential 29 cases(+1 case mentioned <u>sub</u> C)
- C. Opening and Cadential 1 case
  Details:
- A. 22,1.37,2.48,3.49,10.64,4.79,3.84,6.
- B.a Cadences on G; followed by a musical dot and a MeSi, either  $\ddot{y}$  or  $\ddot{y}$  or  $\ddot{y}$  (9,5.14,8.16,8.21,2.21,13.28,6.33,6.50,5...in all 18 cases). In four of these cases no musical dot fol-

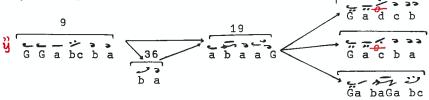
lows (21,13.28,6.33,6.81,3) and in three of them no MeSi follows (21,13.84,21.95,5).

- B.b Cadences on G formed by the combination 17+33A(21,16.33,15 56,10.67,7.79,14); followed by a musical dot and the MeSi y eccept for one case(56,10).
- B.c Leading-on cadences on G<sup>a</sup>. No MeSi follows (35,11.44,18. 56,18.78,11.72,2.88,14.95,2).
- C. At the beginning of the last unit of a G colon(81,3).

No. 18 is a characteristic cadential formula on G. It is found 7 times in melodies of the Deuteros mode, 24 times in melodies of the Plagal Deuteros mode, and 6 times in melodies of the Nenano mode.

#### Formula No. 19

This formula constitutes the so-called ouranisma  $(O\dot{\nu}\rho\acute{\alpha}\nu\iota\sigma\mu\alpha)^{1}$ . It occurs 16 times, viz. 12 times in melodies of the Deuteros mode, once in a melody of the Plagal Deuteros mode and 3 times in melodies of the Nenano mode. It is preceded by the opening formula NO. 9 or by the opening group 9+36, and it is followed either by a thematismos, viz formula No. 4  $[A(\delta,\epsilon), B(\beta,\gamma,\delta)]^{2}$ , or by formula  $51B(\alpha,\beta,\gamma)^{3}$ .



The ouranisma is also found in melodies of the Protos mode. It then has the following form: 4

Further it is met with in melodies of the Plagal Protos mode, but then in transposition to the low  ${\tt D}^5$ .

<sup>1.</sup> Details about the ouranisma will be found in: Constantin Floros, Universale Neumenkunde, Vol. 1, pp. 263ff.

<sup>2. 12,10.13,9.44,8.54,8.54,16.56,8.56,16.68,8.68,17.81,9.88,22.103,16,104,3.</sup> 

<sup>3. 29,16.37,14.54,21.</sup> 

<sup>4.</sup> MMB.Tr.I.Sept.No.41,2.43,2.-41,6.62,6.74,20.101,11. 5.Id.No.47,2.62,1.

#### Formula NO. 20

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6 cases. Distribution:

A. Opening 4 cases

B. Medial 1 case

C. Cadential 1 case

Details

- A. At the beginning of the last or last but one unit of E colons after cadences on E<sup>a</sup> or leading-on cadences on D<sup>a</sup>(4,10, 90,12.95,15.103,18)
- B. 54,1.
- C. Cadence on G. Followed by a musical dot and the MeSi  $\ddot{y}$  (92,7).

#### Formula No. 21

E F Ga G

7 cases. Distribution:

A. Opening 3 cases

B. Medial 4 cases

Details:

- A.a At the beginning of a section. The MeSi $^{n}$  $^{n}$  $^{n}$  $^{n}$ precedes (67,6).
- A.b After cadences on D. Not preceded by any MeSi(37,16.72,5)
- B. 9,6.34,8.34,9.95,14

Formula 21 is in all cases followed by formula  $16 \text{H}\alpha$ . It is found in melodies of the Plagal Deuteros mode(6 cases and once in a melody of the Nenano mode.

#### Formula No. 22

a b c dcbc

5 cases. Distribution:

- A. Opening 4 cases
- B. Cadential 1 case

Details:

- A.a At the beginning of the last unit but one of E colons, after cadences on a or leading-on b<sup>C</sup> (12,2.24,8.44,2).
- A.b At the beginning of a section. Preceded by the MeSi  $\delta$  (68,7).

B. At the end of the last unit but one of a G colon (103,4).

#### Formula NO.23

b cd b

8 cases. Distribution:

A. Opening 8 cases
Details:

- A.a At the beginning of G colons. Preceded by a cadence on G+MeSi  $\ddot{\eta}$  (28,7.81,4) or by a cadence on b+MeSi  $\ddot{\eta}$  (22,8).
- A.b At the beginning of the last unit of G colons. A cadence on b precedes. (13,8.14,4.78,14).
- A.c At the beginning of b colons. Preceded by a cadence on b+MeSi $\vec{\pi}\vec{y}$  or  $\vec{y}$  (55,10.57,2). Formula No. 23 is fifth-transposition of formula No.25.

#### Formula No. 24

G c ba

13 cases. Distribution:

- A. Opening 3 cases
- B. Medial 3 cases
- C. Cadential 7 cases
   Details:
- A. At the beginning of a G colon(24,19) or at the beginning of the last unit of a G colon(27,4.35,18).
- B. 28,3.36,5.55,13.
- C.a Leading-on cadences on Ga attached to the end of such formulas as  $8(B\alpha,E\beta)$ ,  $17\Lambda\beta$ , at the end of the first unit of E or G colons (16,2.66,12.78,9.91,3.91,19.97,7).
- C.d Leading-on cadence on <u>a</u> formed by the addition of the connective formula 8AB(81,16)

#### Formula No. 25

E FG E

5 cases. Distribution:

A. Opening 5 cases
Details:

A.a At the beginning of melodies of the Plagal Deuteros mode.

Preceded by the MSi $\hat{\pi}\ddot{y}$  (50,1.51,1.79,1.83,1):

A.b At the beginning of the last unit but one of an E colon, after a cadence on E. No preceding MeSi (49,13).

The reason why formula 25 is exclusively found in melodies of the Plagal Deuteros mode is that it is a contracted variant of the intonation peculiar to this mode, viz. Let  $\hat{\epsilon}$  a uec.

The fifth-transposition of formula No.25 is formula No.23

#### Formula No. 26

÷ a a E

12 cases. Distribution:

A. Opening 12 cases
Details:

- A.a At the beginning of sections; preceded by the MeSi (4,6.56,6.56,14.79,19.81,7.111,6.111,7).
- A.b At the beginning of G colons after cadences on b+MeSi $\vec{y}$ " (14,8.35,3) or after cadence of D+MeSi $\vec{y}$  (34,13) (see p.88).
- A.c At the beginning of the last unit of G or E colons; not preceded by any MeSi (88,2.106,5).

#### Formula No. 27

G a D

13 cases. Distribution:

A. Opening 5 cases(+1 case mentioned <u>sub</u> C)

B. Cadential 6 cases (+1 case mentioned <u>sub</u> C)

C. Opening and Cadential 1 case

D. Medial 1 case

Details:

- A.a At the beginning of melodies of the Plagal Deuteros mode; preceded by the MSi $\pi y$  (21,1.67,1).
- A.b At the beginning of a melody of the Nenano mode; preceded by the MSi (111,1).
- A.c At the beginning of the last unit of E or G colons; not preceded by any MeSi(35,16.38,11.88,23).
- B. At the end of the first unit at the beginning of melodies of the Plagal Deuteros mode, forming a cadence on D. No MeSi follows. In 3 cases a musical dot follows. (9,1.48,1,79,1.-50,1.51,1.67,1.83,1).

Formula 27 is preceded by formulas such as 25A or 16AB with

which it combines to form such opening groups of melodies as  $\Re y = 25A-27A(\alpha,\beta)(50,1.51,1.79,1.83,1)$ , or  $\Re y = 16\Delta\beta-27A\alpha(9,1.48,1)$ 

C. 67,1.

D. 48,2.

#### Formula No 28.

a FG G

17 cases. Distribution:

A. Opening 9 cases(+1 case mentioned sub C)

B. Medial 7 cases

C. Opening and cadential 1 case
 Details:

- A.a At the beginning of sections. Preceded by MeSi or or except if preceded by a leading-on cadence. (21,4. 23,5.44,5.84,7.91,6.91,17.-51,3).
- A.b At the beginning of E colons; preceded by a cadence on G or Ga+MeSi 3 (35,19.49,16).
- A.c At the beginning of the last unit but one of a G colon; not preceded by any MeSi(50,4), but by a thematismos on a.
- B. 14,7.22,6.48,9.64,6.69,2.79,2.84,23.
- C. At the beginning of a G colon(91,6).

#### Formula No. 29

Gacb

- 10 cases. Distribution:
- A. Medial 2 cases
- B. Cadential 8 cases
   Details:
- A. Combined with formulas 37 and 510 it makes up a characteristic unit at the beginning of sections. Thus  $37+29\Delta+510$  (37,7.79,10).
- B.a Cadence on b; followed by a musical dot and the MeSi $\pi \ddot{y}$ (4,1).
- B.b Leading-on cadences on b:
  - 1) at the end of b colons; followed by a musical dot (18,2. 24,12.103,1).
  - 2) at the end of the first unit of G colons. No musical dot follows (27,1.33,11.48,5).

B. c Leading-on cadence on b<sup>a</sup> formed by the addition of formula 30A, at the beginning of the first unit of a G colon (54,1)

#### Formula No. 30

ووكرية

13 cases. Distribution: b bcba

A. Opening 1 case

B. Cadential 12 cases
Details:

- A. At the beginning of an E colon, after a leading-on cadence of  $G^b(65,12)$ .
- B. At the end of cadential formulas like 11B6,13  $[\Delta(\alpha,\gamma)E\beta]$ ,29A $\alpha$ ,55(A,B),12A $\alpha$ ,forming leading-on cadences on ba. A musical dot follows in 8 cases(4,2.11,1.29,3.37,8.37,9.54,20.57,4.102,25.no dot 13,4.54,1.54,24.90,5). Formula No.30 is fifth-transposition of formula No.32.

#### Formula No. 31

b a

2 cases. in both it is an opening formula of melodies of the the Deuteros mode; it is preceded by the MSi y and followed by formula 7Γ(90,1.91,1).

#### Formula No. 32

E EFED

8 cases. It is found in melodies of the Plagal Deuteros mode at the end of cadential formulas such as 1(B $\delta$ ,  $\Gamma\alpha$ ,  $\Delta\epsilon$ ),16 $\Delta\gamma$ , 53 $\Gamma$ ,28 producing leading-on cadences on E<sup>D</sup>(21,7.22,1.35,19.69,2.78,4.79,8.79,16.79,20). The fifth-transposition of formula No 32 is Formula No 30.

#### Formula No 33

15 7

21 cases. Distribution,

A. Medial 1 case

B.Cadential 19 cases (+1 case mentioned sub C)

C. Connective 1 case

Details:

- A. 12,9
- B.a Cadences on G. Attached to the end of cadential formulas like 2θ(α,β),6Aβ,8(Δα,Εα,Ζβ),14Aα,17Hβ,18(Βα,Γα,Ζα) it forms cadential groups on G. (3,4.21,11.21,16.33,15.34,13.35,9.36,1.37,11.56,10.67,7.79,14.92,4.95,12.102,19.106,6.106,7.106,15. A musical dot and a MeSi(ÿorÿorÿ) follow except for one case (37,11) in which there is no dot and another (56,10) in which there is neither a dot nor a MeSi.
- B.b Cadence on G, by addition of formula 50. No musical dot follows, nor any MeSi(27,7).
- B.c Leading-on cadence on  $C^b$ , by addition of formula 11 $\Gamma\zeta$ ; not followed by any musical dot, nor by any MeSi(35,4).
- B.d Leading-on cadence  $E^{GF}$  attached to the end of formula  $1\Gamma\epsilon$  as a connective formula; followed by a musical dot, but not by any MeSi(102,28/29).
- C. 102,28/29.

#### Formula No.34

b a G

35 cases. Distribution:

13 cases(+1 cases mentioned sub D

A. Opening
B. Medial

4 cases

C. Cadential

17 cases (+1 case mentioned sub D)

- D. Opening and Cadential 1 case
   Details:
- A.a At the beginning of melodies of the Deuteros mode; preceded by the MSi  $\ddot{y}^{(13,1.104,1)}$ .
- A.b At the beginning of sections, after cadences on E or  $E^b$ ; preceded by the MeSi  $\tilde{y}^*$  (55,8.90,5.102,11).
- A.c At the beginning of G,E or D colons after leading-on cadences on b or b<sup>C</sup>; not preceded by MeSi(3,13.11,5.18,3.24,13.29,17.56,4.68,12.104,3).
- A.d At the beginning of the last unit of a G colon, after a cadence on b(22,5).
- B. 17,10.18,8.37,12.110,9.
- C.a Cadences on a at the end of the first unit of E or G colons(17,7.22,10.24,3.81,5.84,26).
- C.b Leading-on cadences on Ga at the end of the last unit but

one of D,E,G, or b colons (29,2.33,16.35,17.50,6.55,3.55,6. 55,8.56,2.57,3.67,2.88,3.110,7).

- C.c A leading-on cadence on b (17,10).
- C.d In the cases listed sub C.a and C.b no musical dot follows nor any MeSi, except for one instance (56,2) of a musical dot and one (22,10) of a musical comma.
- D. 55,8.

## Formula No. 35

- 2 cases. Cadential on G:
- a) at the end of a G colon; followed by a musical dot and the MeSi y (27,8);
- b) At the end of the last but one unit of a G colon. sical dot follows, nor any MeSi(35,15).

Distribution: 7 cases.

- A. Opening 3 cases at the beginning of the last unit of E colons, preceded by a cadence on b,a or D(14,2. 22,3.55,2).
- B. Medial 4 cases (12,10.13,9.92,3.92,8).

### Formula No. 37

- 4 cases in all of which it is opening.
- at the beginning of melodies of the Deuteros mode; preceded by the MSi  $\ddot{y}$  (18,1,97,1);
- at the beginning of sections; preceded by a cadence of Eb+ b) MeSi y (37,7.79,10).

### Formula No. 38

5 cases in all of which it is medial. (18,4.92,5.92,8.97,11. 110,10).

Opening and cadential. 5 cases.

- A. Opening:a) At the beginning of melodies of the Plagal Deuteros mode; preceded by the  $MSi \pi \ddot{y}$  (64,1.106,1).b) At the beginning of sections; preceded by the MeSing (64,3.64,5). c) At the beginning of the last but one unit of an E colon; not preceded by any MeSi(51,8).
- B. Cadential: Cadences on E:not followed by any musical dot. not by any MeSi. There are only two instances of a musical dot (51,8.106,1). Formula No. 39 looks like a combination of the formulas  $34\Delta\alpha$  and  $11\Gamma(\gamma,\iota)$  transposed down a fifth.

# Opening and Cadential:2 cases.

- At the beginning of the last unit of E colons; A. Opening. not preceded by any MeSi(64,2.64,7).
- B. Cadential. a) cadence on E; followed by a musical dot and the MeSi $\pi \ddot{y}$  (64,2).
  - b) Leading-on cadence on E<sup>F</sup>, by addition of formula  $10B\alpha$ ; followed by a musical dot(64,7).

### Formula No. 41.

Opening and Cadential. 1 case(33,9).

- A. Opening: In the last but one unit of an E colon. Not preceded by any MeSi.
- B. Cadential: Cadence on D. Not followed by any musical dot, nor by any MeSi.

2 cases, one in which it is opening after a cadence on E (33,5) and another in which it is cadential on E(51,7).

This formula is only found once (92,7). It is opening at the beginning of a section and is preceded by the MeSi

#### Formula No. 44

DEF E

- 6 cases, in all of which it is cadential, forming
- a) cadences on E at the end of a section(49,11.64,4.64,9.84,6); in these cases it is followed by a musical dot and the MeSi  $\widehat{\pi}_{i}\widehat{y}$ ;
- b) a leading-on cadence  $E^{D}$  at the end of a section, being combined with formula 10  $\Gamma\alpha$  (79,4);
- c) a cadence on E at the end of the first unit of an E colon (48,3); in this case it is neither followed by a musical dot nor by any MeSi.

#### Formula No. 45

b cde d

2 cases in the first of which (17,10) it functions as an opening and cadential formula on d at the same time, being found at the beginning of a section and with a preceding MeSi  $\ddot{y}$ . In the second case (97,9) it is a cadential formula on d and found at the end of the first unit at the beginning of a section.

### Formula No. 46

d a b a

2 cases, one in which it is medial(27,5) and another in which it is opening after a cadence on b(97,2).

#### Formula No. 47

b aG a

1 case only. Cadential on a.(27,2).

#### Formula No. 48

G aE F DE E

1 case only. Cadential on E at the end of a section(28.5).

### Formula No. 49

8 cases in all of which it is cadential, forming leadingon cadences on a(36,2.49,6.69,6.69,8.69,10.69,12.81,12.84.8).

In all cases but one (81,12) it is found in melodies of the Plagal Deuteros mode.

### Formula No. 50

1 case only. Combined with formula 33A it forms a cadential group on G(27,7).

#### Formula No. 51

The number 51 has been assigned to all the various types of melismata which receive a more detailed treatment on pp.74-75.

#### Formula No. 52

b aG

A. Opening 20 cases

35 cases.

- B. Medial 15 cases
  Details:
- A.b At the beginning of D or E colons; preceded by a cadence on G+MeSiÿ or ÿ (9,6.48,12.67,8.72,12.72,16.88,7.88,10.88,13.88,20), or at the beginning of a G colon preceded by a cadence on E+MeSi (91,12).
- A.c At the beginning of the last unit of E colons; not preceded by any MeSi(54,4.79,8.79,16).
- B. 14,2.24,8.27,8.29.17...in all 15 cases.

Distribution:

#### Formula No. 53

G a

- 1 17 cases. Distribution:
- A. Opening 6 cases
- B. Medial 9 cases
- C. Cadential 2 cases

Details:

- A.a At the beginning of sections or colons; preceded by a cadence on E+MeSi $\pi y$  (102,32), or a cadence on G+y (69,16) or a leading-on cadence on E<sup>F</sup> or ba without any MeSi (37.9. 106,3).
- A.b At the beginning of a unit; preceded by a cadence on a or a leading-on cadence on Ga, but not by any MeSi(69,15.50,7).
- 11,13,24,10,24,14,36,1,65,1,68,14,72,15,79,16,91,13. В.
- C. Cadences on a (69,14.69,16).

This formula has only a single occurrence. It is simultaneously opening and cadential on d and preceded by the MeSi $\hat{\pi}\hat{y}$ (66.4).

3 cases, Distribution:

- 1 case(+2 cases mentioned sub B) A. Cadential
- B. Opening and Cadential 2 cases Details:
- In two of the cases formula 30A is added to it to form a leading-on cadence ba(90,5.102,25). In the third case it is combined with the connective formula 56 to form a leading-on cadence on b<sup>c</sup> (102,24).
- B.a At the beginning of a b colon; preceded by the MeSi $\hat{\pi}\hat{y}$  (102.24).
  - b At the beginning of the last unit of a b colon; preceded by a cadence on b<sup>C</sup> (102,25).

#### Formula No. 56

b c a d Only one occurrence (102,24/25). It is connective, forming a leading-on cadence b<sup>C</sup>. It may be viewed as formula 10Aa transposed a fifth higher.

 $$^{\rm C}$$  5 cases in all of which it is opening:

a) at the beginning of a melody of the Plagal Deuteros mode; preceded by the MSing (69.1).

b) after leading-on cadences E<sup>D</sup> (21,8.22,2.69,3.78,5). In all five cases this formula is followed by formula No. 5

# Formula No. 58

One occurence only. Cadential on b.(54,6).

#### Formula No. 59

ンコーション・ファーントラdcddG, dcddcab 2 cases.

- A. Opening. 2 cases:1) at the beginning of a b colon; no MeSi precedes (54,15).
  - 2) at the beginning of the last but one unit of a colon; no MeSi precedes (54,13).
- B. Opening and Cadential. 1 case: Leading-on cadence on b(54,15).

1 case only(66,9). Opening, at the beginning of a section preceded by the MeSi  $\ddot{y}$ :

1 case only (69,4); Opening after a cadence on D at the beginning of the last unit of an E colon.

#### Formula No. 62

1 case only (79.11); Opening preceded by the MeSi == at the beginning of a G colon.

#### Formula No. 63

Opening, at the beginning of the last 1 case only (79,12). unit of a G colon.

#### Formula No. 64

1 case only(79,9). Opening, after a leading-on cadence on  $b^a$  at the beginning of an E colon.

2 cases;

Opening, after leading-on cadences on  $E^{\Gamma}$ , at the beginning of an E colon(79,17), or at the beginning of the last unit of an E colon(35,20).

1 case only(79,21). Opening after a leading-on cadence on  $\mathbf{E}^{\mathbf{D}}$ , at the beginning of the last but one unit of an E colon.

### Formula No.67

1 case only (83,5). Opening, after a cadence on D, at the beginning of an E colon. No MeSi precedes.

#### Formula No.68

1 case only (51,8). Opening, after a cadence on E, at the beginning of the last unit of a G colon.

#### Formula No. 69

1 case only (103,9). Opening, at the beginning of a section preceded by the MeSi  $\ddot{y}$ .

1 case only (55,10). Medial.

#### Formula No. 71

≥ ⊃ × e e a

1 case only (55,11). Opening, after a cadence on d, at the beginning of the last unit of a b colon. It may be considered a fifth-transposition of Formula No.  $27\Gamma$ .

1 case only (11,4). Opening, at the beginning of a section; preceded by the MeSi  $\delta^{**}$ 

# TABLE\_OF\_THE\_FORMULAS WITH\_THE\_NUMBER\_OF\_THEIR\_OCCURRENCES. ARRANGED\_ACCORDING\_TO\_MODES.

Formulas	Deu	teros	Pl.De	uteros	Ne	nano	To	tal
1 OI Marab	cases	%	cases	%	cases	%	cases	%
1	79	7.64	78	8.76	21	9.25	178	8.27
2	52	5.02	36	4.04	14	6.16	102	4.74
3	24	2.32	21	2.35	5_	2.20	50_	2.32
4	31	2.99	18	2.02	11	4.86	60	2.78
5	8	0.77	21	2.35	9	3.96	38	1.76
6	17	1.64	38	4.26	5	2.20	60_	2.78
- <del></del> <del>7</del>	93	8.99	57	6.40	18	7.92	168	7.81
8	69	6.67	33	3.70	9	3.96	111	5.16
. 9	106	10.25	62	6.96	15	6.60	183	8.50
10	66	6.38	66	7.41	18	7.92	150	6.97
11	41	3.96	16	1.79	1	0.44	58	2.69
12	30	2.90	7	0.78	4	1.76	41	1.90
13	40	3.86	10	1.12	5	2.20	55	2.55
14	18	1.74	7	0.79	1	0.44	26	1.20
15	45	4.35	20	2,24	4	1,76	69	3,20
16	108	10.44	111	12.47	26	11.45	245	11.39
17	55	5.31	107	12.02	23	10.13	185	8.60
18_	7_	0.67	24	2,69	6	2.64	37	1.72
19	12	1.16	1	0.11	3	1.32	16	0.74
20	5	0.48	1	0.11		-	6	0.27

Formulas	Deu	teros	P1.D	euteros	Nenai	10	Tota	11
	cases	8	cases	%	cases	8	cases	%
21	-	-	6	0.67	1	0.44	7	0.32
22	4	0.38	-	-	1	0.44	5	0.32
23	6	0.58	2 ·	0.22	-	<u> </u>	8	0.37
24~	8	0.77	44	0.44	1	0.44	13	0.60
25	_	_	5	0.56	_		5	0.32
26	5	0.48	4	0.44	3	1.32	12	0.55
· <u>-</u> 27	† <u>-</u>	- <u></u>	11	1.23	<u>2</u>	0.88	13	0.60
28	4	0.38	13	1.46	-	0.00	17	0.79
29	6	0.58	4	0.44	_	<u> </u>	10	0.46
		0.96			<u>-</u>	ļ <u>_</u>		
30	10		3	0.33	-	i -	13	0.60
31	2	0.19			-	-	2	0.09
32	<u> </u>		8	0.89		<u> </u>	88	0.37
33	77	0.67	14	1.57	-	-	21	0.97
34	23	2.22	8	0.89	4	1.76	35	1.62
35	1	0.09	1	0.11	-	-	2	0.09
36	6	0.58	11	7.71		ļ <u>-</u> -	77	0.32
37	2	0.19	2	0.22	-	<u> </u>	4	0.18
38	4	0.38	_	_	1	0.44	5	0.23
39	<del> </del>		<del> </del> 5	0.56	├ <u>=</u>	<del> </del>	5	0.23
40	1 _		2	0.22	_	_	2	0.09
41	_	_	1	0.11	_	_	1	0.04
· <del>1</del> 1.	<del> <u>-</u></del>		$\frac{1}{2}$	0.11		<del> </del> <u>-</u> -	2	-0.04
	1			0.22	-	!	f :	
43	1	0.09	_		-	! -	1	0.04
44	ļ		6	0.67	L	<u> </u>	6	0.27
45	72	0.19	-	-	-	-	2	0.09
46	2	0.19	- 1	-	-	-	2	0.09
47	1	0.09	-	-	-	-	1	0.04
48	11	0.09	1	<b>-</b>		i	1	70.04
49	1	0.09	7	0.79	-	<u> </u>	8	0.37
50	1	0.09	- 1	i -	i -	<u> </u>	1	0.04
51	<del> </del> 4	0.38	13	1.46		1.76	7721	-0.97
52	11	1.06	15	1.68	9	3.96	35	1.62
53	5	0.48	9	1.01	3	1.32	17	0.79
54	+≚		<u>1</u>	6.11	<u>-</u>	{- <del></del>	11	-0.04-
55	3	0.29	1 1	0.11	_		3	0.13
	1	•	-	_	-	!	1	0.04
56	+	0.09	<u>-</u>		L	<u> </u>	<del>5</del>	
57	-		5	0.56	-	-		0.23
58	1	0.09	- :	-	_	-	1	0.04
59_	2	0.19	<u> </u>	<u> </u>	L	<u> </u>	2	0.09
60			71	<sup></sup> 0.11		} <u>-</u> -	11	70.04
61	-	<b>!</b> -	1	¦ 0.11	-	-	1	0.04
62	-	! -	1	0.11	-	-	1	0.04
63	<b> </b>	!	<u> </u>	0.11		ļ <u>-</u> -	1	70.04
64	-	! -	1	0.11	_	-	1	0.04
65	-	<u> </u>	2	0.22	_	<u> </u>	2	0.09
66	<del> </del>	<u> </u>	<del> </del>	0.11	} <u>-</u>	{ <u>-</u> -	1	0.04
67		¦ _	1	0.11	_	_	1	0.04
	1 -	¦ -	1		-	¦ -	1	
68	<del> </del>		<b></b>	0.11	L		L	0.04
69	1 1	70.09	-	<u> </u>	-	i -	11	7.04
70	1	0.09	-	-	-	· -	1	0.04
71	1	0.09	-	-	-	-	1	0.04
72	1	0.09	1 -				1	0.04
otal	1034		890		227		2151	

### OPENING FORMULAS

#### TABLE I

		at t	he be of	ginni	ng	
Opening	formulas	melodies	sections	colons	units	cases in all
1A H			1		1	2
2A	α β			1	1 2 1	
9	α α β			1 1	1 1 1 2 35	13
3A Г Е Z				2	35	39
4A Be	Υ Ou β		8 2 1 1			13
.5A	O.		6 1 1		1 1	10
6A	α β Y		1 1 1 3 1	1	2 1 2	
re	oι β		1		4 1 1	19

formul.	mel.	sect.	col.	un.	in all
7Aα				34	
β				9	i i
δ	1	3			
δ	1 1 1	3 2 1	1	5	1
ε Βα γ δ	1	1		_	
Box		ا م		3	
5		_ <u>_</u>	1		
Г	1	2 5 1	1 3	15	89
8Ав	_			15 3	- 55
Ζγ		1			
Нα			1		
θα	4 3	1			
β	3				
Υ				2	15
9Aa			27	2 2 1	
β			5 6 3 11 2 1	1	
γ			6		1 1
D			3	_	
Bα β			11	2	
P			1	- 1	[
				1	
γ δ Γα			15	1 1 2	
B		1	1	_	
β δ			5		
ε			5	1	
ε ζ			3		
n Đ			15 5 5 9 1	1	
9			1		
l				1	
Δα			1		
β			1		
δ			6		
ε			12	1	
Εα. β			1 6 1 3 12		
P			<u>+</u>		

formul.	mel.	sect.	col.	un.	in all
9 <b>Ε</b> δ ε		2	3	2	
Zβ			1 6	2	151
γ 10Βγ		1	0		131
ε ζ		1		1 1 2	
Δα β	4	6	4 1	2	
Eα β	1 2 4	7 1		1 1	
lγ	4	_			
δ Ζα		4	1 1	2 1	
β Υ		1		1	
γ δ Η	1 1 1			1	
θ Ια	1		1		
β				1	56
11Αα Βα		3 1	1 1		
β η			3 1		
Γα. δ		1		1	
ε Ε	1 1		•		
Z			2	1	18
12Aα Υ	4		1		
Υ Β Γα	1	3 2			
β	_	-	1 1 1 1	1	
γ δ		1	1		
Δ Εα			1	1	
γ 13Aβ			1	1	21
γ Βα			4	1 2	
β			2	2	
Γ Δγ				10 1	
Εα δ		1	1	2	33
14Aα β				2 1 2 1	
γ				2	
В				1	

formul.	mel.	sect.	col.	un.	in all
Γ Δ Ε			3 1	1	15
15Aα β γ ε Ββ γ δ ε Γ Δα β Εα β		1 4	1 1 1 1 1 2 2	2 6 4 1 3 1 1	
Υ 16Bα Υ Γ Δα β Υ Ηβ Θα β Κα Μα ΝΥ Εβ	2	1 3 1 1	1	1 2 7 1 1	37
17 Aα β γ δ ε η θ ι Βα β Εα β Σα β Ηα β δ ε Σα β	2	1 2 1 2 1	1 2 2 1 2 5	3 4 2 2 3 1 1 1 1 2 1 1	

17θα	C					2
17θα       1       2         β       1       2         κα       1       92         18Δβ       1       1         20       1       3       4         21       1       2       3         22A       3       4       3       7         22A       4       3       7       3       6         23       4       3       7       2       1       1       2       3       2       1       2       3       2       1       2       3       2       1       2       3       2       1       1       3       4       3       7       2       3       1       3       4       3       7       2       3       3       7       2       1       1       3       6       2       2       1       1       3       6       2       2       1       1       3       6       2       2       1       1       3       6       2       2       1       1       3       6       2       2       1       1       3       4       3       3       3       3	rormur.	meı.	sect.	COT.	un.	in
β       1       2         β       1       92         18Δβ       1       1         20       1       3       4         21       1       2       3         22A       3       4       3       7         22A       4       3       7       3       7         24Aα       1       2       3       3       1       2       3       2       3       1       2       3       2       3       6       2       1       1       2       3       6       2       1       1       3       6       2       1       1       3       4       4       3       7       7       1       3       6       2       1       1       3       6       2       1       1       3       6       2       1       1       3       6       2       1       1       3       6       2       1       1       3       6       2       2       1       1       3       4       2       2       1       1       3       4       3       3       3       3       3       3 <t< td=""><td>1700</td><td></td><td></td><td></td><td>1</td><td>arr</td></t<>	1700				1	arr
Κα       1       1       92         18Δβ       1       1       1         20       1       3       4         21       1       2       3         22A       3       4       3       7         24Aα       1       2       3       3       4         23       4       3       7       2       3       4         25A       3       1       2       3       6       2       11       2       3       6       2       1       1       3       6       2       1       1       3       6       2       1       1       3       6       2       1       1       3       6       2       1       1       3       6       2       1       1       3       6       2       1       1       3       6       2       1       1       3       6       2       1       1       3       6       2       1       1       3       6       2       1       1       3       6       2       1       1       3       1       1       1       3       1       1			١,		5	
β       1       4       92         18Δβ       1       1       1         20       1       1       3       4         21       1       2       3       3         22A       3       4       3       7         2AAα       1       2       3       1         23       4       3       7       2       3         25A       3       1       5       5         26A       6       1       2       1       5         26A       6       1       2       1       1       3       6       2       1       1       3       6       2       1       1       3       6       2       1       1       3       6       2       1       1       3       6       2       1       1       3       6       2       1       1       3       6       2       1       1       3       1       1       1       3       6       2       1       1       3       1       1       1       3       1       1       3       1       1       3       1       1				ĺ	-	
Λα       4       92         18Δβ       1       1         20       1       3       4         21       1       2       3         22A       3       4       3       7         24Aα       1       2       3       7         24Aα       1       2       3       1       5         26A       6       1       2       1       1       5         26A       6       1       2       1       1       2       1       1       3       6       2       11       1       3       6       2       1       1       3       6       2       1       1       3       6       2       1       1       3       6       2       1       1       3       6       2       1       1       3       6       2       1       1       3       6       2       1       1       3       6       2       1       1       3       6       2       1       1       3       6       2       1       1       3       3       3       3       3       3       3       3						
β         1         92           18Δβ         1         1         1           20         1         3         4           21         1         2         3         4           22A         B         1         2         3         2           B         1         2         3         7         2         3         7         2         3         3         7         2         3         3         1         5         3         1         5         3         6         1         2         3         3         6         1         2         1         1         3         6         2         1         1         3         6         2         1         1         3         6         2         1         1         3         6         2         1         1         3         6         2         1         1         3         6         2         1         1         3         4         3         3         1         1         3         4         3         3         3         3         3         3         3         3         3         3				1		İ
18Δβ         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         2         3         4         3         7         2         4         3         7         2         3         1         2         3         2         3         1         2         3         2         3         1         2         3         2         3         1         2         3         2         3         1         2         3         3         3         1         2         3 <td></td> <td></td> <td>4</td> <td>١.,</td> <td></td> <td>ا مم ا</td>			4	١.,		ا مم ا
20					1	
21         1         2         3           22A         B         1         4         3         7           24Aα         1         2         3         7           24Aα         1         2         3         7           25A         3         1         5         5           26A         6         1         2         11         5           26A         6         1         2         11         2         12         11         3         6         6         1         2         11         1         3         6         6         1         2         11         1         3         6         6         1         2         1         1         3         6         6         1         2         1         1         3         6         2         1         1         3         6         2         1         1         3         6         2         1         1         3         6         2         1         1         3         4         3         3         3         3         3         3         3         3         3         3         3				1		
22A       B       1       4       3       4         23       4       3       7       2       4       3       7         24Aα       1       2       3       1       5       2       3       1       5       2       1       1       5       2       1       1       5       2       1       1       5       2       1       1       3       6       2       1       1       3       6       2       2       1       1       3       6       2       2       1       1       3       6       2       2       1       1       3       6       2       2       1       1       3       6       2       2       1       1       3       6       2       2       1       1       3       6       2       2       1       1       3       6       2       2       1       1       3       6       2       2       1       1       3       4       3       1       1       3       4       3       3       3       3       3       3       3       3       3       3       3 <t< td=""><td></td><td></td><td>1</td><td>1</td><td>3</td><td></td></t<>			1	1	3	
B			1	- 2		3
23	1		١,		ا ا	
24Aα         1         2         3           25A         3         1         5           26A         6         1         2         11           27B         2         1         1         2         11           27B         2         7         2         1         10         3         6         2         1         10         3         6         2         3         4         1				<del>                                     </del>		
25A 3 1 5 26A 6 1 2 11 27B 2 7 1 3 6 28 7 2 1 10 30A 1 1 1 31 2 2 2 34Aα Bα 2 β 1 Γα Δα 1 β 1 14 36 α 3 3 3 37 2 2 2 4 4 39 α 1 1			<u> </u>		3	
B         1         5           26A         6         1         2           B         2         11           27B         1         3         6           28         7         2         1         10           30A         1         1         1         1           30A         1         1         1         1           31         2         2         2         3         3           β         1				1		3
26A B Comparison of the property of the prope	1				1	_
B 27B 2 3 6 28 7 2 1 10 30A 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		1				5
27B     2       Γ     1       30A     1       31     2       34Aα     7       Bα     2       βα     1       Γα     1       Δα     1       β     1       36 α     3       37     2       2     4       39 α     1       γ     1       40 α     1       β     1       41     1       42 α     1       43     1       443     1       45 α     1       1     1       46     1       51Γ     1       Δα     1       2     1       β     1       1     1       46     1       51Γ     1       Δα     1       2     1       3     1       4     1       51Γ     1 <t< td=""><td></td><td></td><td>  6</td><td></td><td>2</td><td></td></t<>			6		2	
Γ 1 3 6 28 7 2 1 10 30A 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	B		ļ	2		11
28     7     2     1     10       30A     1     1     1       31     2     2     2       34Aα     β     1     1       Bα     2     1     1       Γα     1     1     1       Δα     1     1     1       36 α     3     3     3       37     2     2     3     4       39 α     1     1     1     1       γ     1     1     1     2       41     1     1     1     1       42 α     1     1     1     1       45 α     1     1     1     1       51Γ     1     1     1     1       Δα     1     2     1     1       β     1     1     1     1       δβ     1     1     1     1       Δα     1     2     1     1       β     1     1     1     1       46     1     1     1     1       51Γ     1     1     1     1       Aα     1     1     1     1       β     1 <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td></td<>						
31     2       34Aα     7       Bα     2       β     1       Γα     1       Δα     1       β     1       36 α     3       37     2       2     3       39 α     1       γ     1       40 α     1       β     1       1     2       41     1       42 α     1       45 α     1       1     1       46     1       51Γ     1       Λα     1       2     1       2     1       2     1       2     1       4     1       51Γ     1       Λα     1       2     1       2     1       4     1       51Γ     1       4     1       51Γ     1       4     1       51Γ     1       4     1       5     1       6     1       7     1       1     1       2     1       3     1       4		1				
31     2       34Aα     7       Bα     2       β     1       Γα     1       Δα     1       β     1       36 α     3       37     2       2     3       39 α     1       γ     1       40 α     1       β     1       1     2       41     1       42 α     1       45 α     1       1     1       46     1       51Γ     1       Λα     1       2     1       2     1       2     1       2     1       4     1       51Γ     1       Λα     1       2     1       2     1       4     1       51Γ     1       4     1       51Γ     1       4     1       51Γ     1       4     1       5     1       6     1       7     1       1     1       2     1       3     1       4			7	2	1	
34Aα	30A			1		1
Bα       2         β       1         Γα       1         Δα       1         β       1         36 α       3         37       2       2         39 α       1       1         γ       1       5         40 α       1       1         β       1       2         41       1       1         42 α       1       1         43       1       1         45 α       1       1         51Γ       1       1         Δα       1       2         β       1       1         2       1       1         2       1       1         4       1       1         51Γ       1       1         Aα       1       2         β       1       1         51Γ       1       1         Aβ       1       1         1       1       1         2       1       1         3       1       1         4       1       1      <		2		<u> </u>		2
β			1	7	1	]
Γα Δα 1 1 14 36 α 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3		2			1	1
Δα 1 1 14 36 α 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3			1		1	
β     1     14       36 α     3     3       37     2     2     4       39 α     1     1     1       β     1     1     5       40 α     1     2     1       41     1     1     1       42 α     1     1     1       43     1     1     1       45 α     1     1     1       51Γ     1     1     1       Δα     1     2     2       β     1     1     1       Z     1     1     1       H     1     1     1			l	1		
36 α			1			
37     2     2       39 α     1     1       β     1     1       40 α     1     2       41     1     1       42 α     1     1       43     1     1       45 α     1     1       46     1     1       51Γ     1     1       β     1     1       Z     1     1       H     1     1	β		1	L		
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	36 α		ļ		3	
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$		2				4
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$		1				
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	β		1	1	1	
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	Υ	1	L.,			5
41	40 a			1		
1		<u> </u>	L.			2
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$						
45 α					1	
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$			1			1
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$			1			
Δα 1 2 1 2 1 1 H 1 1 1 1 1 1 1 1 1 1 1 1 1					1	1
Δα 1 2 1 2 1 1 H 1 1 1 1 1 1 1 1 1 1 1 1 1	51Γ			1		
β   1   1   1   1   1   1   1   1   1	Δα	1	2			
Z   1			1			
H   1		1		1		
		1				
K       1	К			1	1	[ ]
Λ 1 9			1	1		9

formul	mel.	sect.	col.	un.	in
					all
52 <b>A</b> α		1	2		
β			4		
В			3		
Δα				2	
β		2 1 3	1		
Eα		1			
β		3			
H			i	1	20
53Aa				1	
δ		,	1		
ε			1		
₽				1	
Вβ			1		
Δ		1			6
54			1		1_
55A			. 1	1	
57	1	2	2		5
59A				1	
В		[	1		2
60		1			1
61				1	1
62			1		1
63				1	1
64			1		1
65 a		1	l		
β		_		1	2_
66				1	1
67			1		1
68	T		T	1	1 1 1
69		1			1
71		<del> </del>		1	1
72	<b> </b>	1		T -	1
<del>- '</del>	<del>                                     </del>	<del></del>	_	<del>                                     </del>	
total number	56	152	264	331	803

Opening	Ме	lodi	es	Se	ctio	ns	Сс	lons		,	Unit	s	Tota
formulas		P1.B	N		P1.B	N	В	P1.B	l N		P1.B	N	1
1					1			 	<del>  '`</del>		i		
2	-	_ !	_	_	i 1	_	<del>-</del> .		<u> </u>	- 6	1 2	- 2	2 13
3	_		_	_	! - !	_	1	1	1	18	16	2	39
4				4-	6-		<u>=</u>	<u>-</u>	¦- <u>=</u>	<u>-==</u>	¦- <u>-</u> ĭ		33
5	_	- 1	-	3	4	1	_		<u> </u>	_	1	1	10
6	-		-	2	5	-	_	1	i -	1	9	1	19
77	1		3	4-	7	3		5	i	37-	-21	8	89
8	7	-	-	1	1	-	1	¦ -	¦	5	-	¦ -	15
9					1	1	_71	47	14	10	7		151
10	4	10	-	14	6	2	5	3	<u> </u>	2	7	-	56
11	2	-	-	3	2	-	6	3	i -	-	2	-	18
<u>12</u>	5	i		$-\frac{2}{1}$	3	1_1	5	<u>1</u>	2	1-1	12		21
14	-	_	-	ľ	- 1	-	7 2		2	16	2	1	33
15		_	_	- 2	- 4	-	4	2 4	-   3	7 12	4	- 1	15 37
716		2-	<u>-</u>		5				!-=	- <del>-</del>	! <u>*</u>		$\frac{37}{32}$
17	_	3	_	6	8	2	8	10	3	15	33	4	92
18	_	_	_	_	_	-	_	-	<u> </u>	1	-	_	1
20		i	=	<b></b> -			<del></del>	i <u>-</u>	i- <u>-</u>	<u></u>	1-		<del>-</del>
21	-		-	-	1	-	-	1	1	_	- 1	-	3
22	-	 	-	-		1	-	¦ –	i –	3	-	-	4
23		-				[	3	1-1-	!	2	1-1		7
24	-	-	-	-	-	-	1	! -	-	1	1	-	3
25		4			i	-			¦		1		5
27	-	2	-	4	1	1	1	11	[-1	-	1-1	1	11
27	-	2	1	3	- 4	-	-	2	i -	-	2.	1	6
30			<u>-</u>				<u>=</u>	$\frac{1}{1}$	<u> </u>	<b> </b> -	11_		10
31	2	_	_	-	<u> </u>	_	_	<u> </u>	! <del>-</del>	_	-	_	2
34	2			3	_	-	7	_	1	_	1	_	14
36	=-			- <u>-</u> -			<u>-</u>		<del> </del> -=	2	<del> </del>		
37	2	i - i	_	_	2	-	_	<u> </u>	i -	-	i -	i -	4
39	-	2	_	-	2		_	i –	i –	-	1	i -	5
40						! <del>-</del>		!	1		2		2
41	-	-	-	-	-	-	-	-	-	-	1	-	1
42			- 	L		- 			i -	<u>L</u>	1		11
43	-	i - i	· -	1-1-		-	_	-	- <sup>-</sup>	-	i -	i -	11
45	_	! _ !		1	<u> </u>	_	_	!	!		!	!	1
<del></del> <del>46</del>	=		<del></del>	├-≛-			<u>=</u>		<u> </u>		{ <u>-</u>	<u></u>	· <del>-</del>
51	_	1	2	1	1	2	1	_	i _	-	1	i	9
52	_	i - i	i	3	3	1	1	3	6	1	2	i –	20
53	<u>-</u> -	ii		1-1-		}- <u>=</u>	<u>=</u>	3	1- <u>-</u>	├- <u>-</u>	1 <u>-</u>	<del> </del>	
54	-	-	-	-	-	-	_	1	l –	_	-	!   –	1
55	=	! <u>-</u> !		L_ <del>-</del>	<u> </u>		1	<u> </u>	ļ -	1	-	ļ -	2
57	==-	1	_ <del>-</del>	T	2	[		2	!	[	!	<u></u>	5
59	<u> </u>	<u> </u>	<u> </u>	L_=_	<u> </u>	<u> </u>	11	i –	i -	1_1_	 		2

Opening	Me.	lodi	es	S	ectio	ns	Co:	lons			Unit	s	Total
formulas	В	P1.B	N	В	Pl.B	N	В	P1.B	N	В	Pl.B	N	
60	_		-	_	1	_	-	-	-	_	-	_	1
61		! - !	-	_	-	_	_	-	_ 1	_	1	- :	1
62	-		-	-	-	-	_	1	-	-	-	-	1
63 7					-			<u> </u>			1		1
64	-	-	-	-	-	-	-	1	-	-	-	-	1
65	<b>-</b> _	<u> </u>	L	-	1	-	-		- 1		1	-	2
66				_		[	=-				1-1		1
67	-	-	-	-	-	-	-	1	-	-	- 1	-	1
68		: - :	- 1	-	- :	-	_	! -	-	-	1	-	1
69	-	-		1				; <u>-</u>		-==			1
71	_	-	-	- 1	-	¦ -	-	-	- :	1	-	-	1
72			-	1	_	-		-	-			-	1
Total	25	25	6	64	71	17	127	101	36	155	147	29	803
		56	-		152			264			331		

#### Observations

#### 1) Formulas Opening Melodies

It is evident from the above tables that each mode has its own opening formulas, as follows:

- A) Deuteros mode: 7.8.10.11.12.31.34.37
- B) Plagal Deuteros mode:10.16.17.25.27.39.51.57
- C) Nenano mode: 7.27.51

#### Exceptions:

- a) Formula 7 occurs as an opening formula of the Deuteros mode (preceded by the MSi y) and of the Nenano mode (preceded by the MSi y). See "Signatures of the Deuteros mode, B, p. 81.
- b) Formula 10 occurs as an opening formula of the Deuteros mode (preceded by the MSi y ) and of the Plagal Deuteros mode (preceded by the MSiny ).
- c) Formula 27 occurs as an opening formula of the Plagal Deuteros mode (preceded by the MSiny) and of the Nenano mode (preceded by the MSiny).
- d) Formula 51 occurs as an opening formula of the Plagal Deuteros mode (preceded by the MSing) and of the Nenano mode (preceded by the MSing).
- 2) Formulas Opening Sections
- A) Deuteros mode: 4.5.6.7.8.10.11.12.13.15.16.17.26.28.34.43. 45.51.52.53.69.72.
- B) Plagal Deuteros mode: 4.5.6.7.8.9.10.11.12.15.16.17.21.26. 28.37.39.51.52.57.60.65.
- C) Nenano mode: 4.5.7.9.10.12.17.22.26.51.52.
  Details:

#### Formulas occurring:

- a) in the Deuteros mode only:13.34.43.45.53.69.72.
- b) in the Plagal Deuteros mode only:1.21.37.39.57.60.65.
- c) in the Deuteros and the Plagal Deuteros modes: 6.8.11.15.16.28
- d) in the Plagal Deuteros and Nenano modes:9.
- e) in all three modes: 4.5.7.10.12.17.26.51.52.

#### 3) Formulas Opening Colons

- A) Deuteros mode: 3.8.9.10.11.12.13.14.15.17.20.23.24.26.34.51. 52.55.59.
- B) Plagal Deuteros mode: 2.3.6.7.9.10.11.12.13.14.15.16.17.21. 23.26.28.30.52.53.54.57.62.64.67.
- C) Nenano mode: 2.3.9.12.13.15.17.21.26.34.52.
  Details:

#### Formulas occurring

- a) in the Deuteros mode only:8.20.24.51.55.59.
- b) in the Plagal Deuteros mode only:6.7.16.28.30.53.54.57.62.64.67.
- c) in the Deuteros and Plagal Deuteros modes:23
- d) in the Deuteros and Nenano modes:2.21.
- e) in the Plagal Deuteros and Nenano Modes:34
- f) in all three modes:3.9.12.13.15.17.26.52.

  Formula 9 is first and foremost an opening formula of colons-of all three modes. 132 cases(=50%).

#### 4) Formulas Opening Units

- A) Deuteros mode: 2.3.6.7.8.9.10.12.13.14.15.16.17.18.20.22.23. 24.36.46.52.55.59.71.
- B) Plagal Deuteros mode: 1.2.3.4.5.6.7.9.10.11.12.13.14.15.16. 17.20.23.24.25.26.27.28.34.36.39.40.41.42.51.52.53.61.63. 65.66.68.
- C) Nenano mode: 2.3.5.6.7.10.13.15.16.17.26.27.
  Details:

#### Formulas occurring

- a) in the Deuteros mode only:8.18.22.55.59.71.
- b) in the Plagal Deuteros mode only:1.4.11.25.28.34.39.40.41. 42.53.61.63.65.66.68.
- c) in the Deuteros and Plagal Deuteros modes: 9.12.14.20.23.24. 36.46.52.
- d) in the Plagal Deuteros and Nenano modes: 5.26.27.

- e) in all three modes:2.3.6.7.10.13.15.16.17.

  Formulas 3.7.15.16.17 are first and foremost opening formulas of units. 195 cases (=59%).
- 5) Opening formulas which occur only once or twice
- A) Deuteros mode: 31.43.45.46.55.59.69.71.72.
- B) Plagal Deuteros mode: 1.30.40.41.42.54.60.61.62.63.64.65.66.67.68.
- 6) Opening formulas which occur only at the beginning of
- a) units:18.36.40.41.42.46.61.63.66.68.71.(+1.2.3.14.22.24.55.65)\*.
- b) colons:54.62.64.67.(+9.21)\*
- c) sections:43.45.60.(+5.28)\*
- d) melodies:31(+25).
- 7 Opening formulas which occur simultaneously at the beginning of
- a) melodies, sections, colons and units:7.8.10.11.12.16.17.34.51.
- b) melodies, sections and colons:57
- c) melodies and sections:37
- d) melodies, sections and units:39
- e) melodies and units:27
- f) sections, colons and units:6.13.15.26.28.52.53.
- g) colons and units:23.24.59.
- P Particular observations
- 1) The formulas 1 and 2 are principally cadential. Nevertheless, in a limited number of cases they have the double function of being opening and cadential. This happens when a melisma or a cadence requires to be followed by a cadence on E or G respectively and the hemistich is too short for a combination with other formulas to be possible.
- 2) Formula 3 is first and foremost an opening formula of units.

  Only in three cases is it found at the beginning of a section.

  (See formula No. 3, observation A.b).
- 3) Except for one instance the occurrences of formula No.4 are all at the beginning of section after leading-on cadences on  $\mathbf{E}^{\mathbf{F}}$  or  $\mathbf{E}^{\mathbf{D}}$ .
  - \* The formulas in parenthesis are such as occur in other positions too, but only in a very restricted number of cases.

4) When formula  $10\Delta\alpha$  occurs elsewhere than at the beginning of melodies it is always preceded by a thematismos "thes-kai-apothes".

#### CADENCES

Cadences are such melodic lines as indicate the end of the melody or a temporary pausing, especially on one of the dominant notes.

The cadences were divided into two categories 1:

- a) The real cadences (C), and
- b) Leading-on cadences (C1).

The Cl differ from the C by being slightly modified at the end by the addition of one or more neumes or a whole formula to connect them to a following opening formula.

The reasons why I have not in the present study followed the threefold division are of an entirely practical character I think that the twofold division which I have used gives a more exact picture of the syntactic structure of the melodies.

The C and Cl were further subdivided into the following categories:

#### a) CA and ClA

The CA occur at the end of melodies or sections of melodies at such points at which the text usually carries a full stop or a

a) Final, i.e. such as occur at the end of the melodies.

<sup>1</sup> In the contemporary system of Byzantine music the cadences are divided, according to their position within the melodies, into the following three categories:

b) Complete, i.e. such as occur in the course of the song on the basic note on points at which the text has a full stop or a high point.

c) Incomplete, i.e. such as occur in the course of the song, especially on the dominant notes, on points at which the text has a high point or a comma.

See Χρυσάνθου, Μέγα θεωρητικόν της μουσικής, Trieste 1832, p.133. Δ.Γ. Παναγιωτόπουλου, θεωρία καί πράξις της Βυζαντινής μουσικής, Athens 1947, p.128. Ίωάννου Μαργαζιώτου, θεωρητικόν της Βυζαντινής ἐκκλησιαστικής μουσικής, Athens 1968, pp.35-36

high point. The C1A occur in the same positions as the CA with the exception that they are never found at the end of melodies.

b) CB and C1B

These occur at the end of colons at such points at which the text usually carries a high point or a comma.

c) CC and C1C

These are found at the end of units at such points at which the texts have a comma or no interpunction at all. The following table shows the notes on which the above cadences are realized.

CA: on E

C1A: on  $E, E^D, E^F, E^G$ 

CB : on D,E,G,b

C1B: on  $D^a$ , E,  $E^D$ ,  $E^F$ ,  $E^G$ ,  $G^F$ ,  $G^b$ ,  $G^{bc}$ ,  $G^b$ ,  $G^b$ 

CC: on D,E,G,a,b,d.

C1C: on Da, E, ED, EF, EG, Ga, a, b, ba, bc, bG. Gb.

The cadences are described infra in the following order:

Cadences on E (CA, C1A, CB, C1B, CC, C1C).

Cadences on G (CB, C1B, CC, C1C).

Cadences on a (CC, C1C).

Cadences on b (CB,C1B,CC,C1C).

Cadences on D (CB,C1C,CC,C1C).

Cadences on d (CC).

#### CADENCES ON E

CA: 163 cases.

For CA cadences on E the following formulas are used:

- a)  $1[A(\alpha,\beta,\gamma,\delta,\eta),B(\alpha,\beta),\Gamma(\alpha,\beta,\gamma),\Delta(\alpha,\beta,\gamma,\zeta),E(\alpha,\beta,\gamma,\delta),Z(\alpha,\beta),H\alpha]$  (11,7. 11,14. 12,5. 13,3. 21,18. 22,11. 23,11. 24,11. 27,11.28,12 ....in all 138 cases).
- b)  $16[A(\beta,\gamma),\Delta\gamma,Z(\beta,\delta), M(\beta,\gamma,\epsilon,\zeta,\eta)]$  (69,11. 69,13. 72,13. 81,10. 102,31.... in all 19 cases).
- c) 40a (64,2)
- d)  $44(\beta,\gamma)(49,11.64,2.64,4.84,6)$ .
- e) 48 (28,5)
  CA cadences are followed by a musical dot and a MeSi, the

<sup>\*</sup> Lack of MeSi occurs when the CA cadence is found at the end of a melody(56 cases). This shows that the modern habit of "confirming"the final tone by means at a "μαρτυρία" is not old.

the latter being  $\hat{\pi}$  in 41 cases,  $\hat{\pi}$  in 8,  $\hat{y}$  in 1,  $\hat{y}$  in 12,  $\hat{y}$  in 23,  $\hat{y}$  in 13, and  $\hat{s}$  in 4 cases.

Lack of MeSi occurs only in 5 cases for which I am not able to offer any explanation. (28,5.37,3.69,11.88,10.111,7).

C1A:45 cases.

For C1A cadences on  $E^{G}$ ,  $E^{F}$ ,  $E^{D}$ , E, the following formulas are:

- a)  $1(A\beta, \Gamma\beta, \Delta\beta, E\beta, Z\beta), 16Z\zeta + 4E\alpha(3,3.18,5.24,9.72,9.78,6.88,15$ 97,4.103,2.103,13.-102,6)
- b) 1(Aε, Βγ, Γζ, Δδ, Εε), 16Μδ + 10Αα(3,5. 16,3. 21,9. 29,8. 36,7.66,2. 68,9. 84,13. 84,19. 92,10.97,8.— 78,12. 90,7. 102,18. 106,11).
- c) 1Ez, 40a + 10Ba (110,4.-64,7).
- d)  $1(A\zeta, \Gamma\delta, E\eta, Z\gamma), 16M\alpha$ ,  $+ 10B\beta$  (3,8. 17,2. 29,13. 34,11. 50,2. 72,3— 102,22).
- e)  $1\Delta \zeta$ ,  $16A\gamma$ ,  $44\alpha$  +  $10\Gamma\alpha$  (51,2.— 48,4 79,4).
- f)  $1(A\beta, E\beta)$  +  $10\Gamma\beta$  (3,11, 33,10, 95,3).
- g)  $1B\delta, 16\Delta\gamma, 53\Gamma$  + 32A (21,7.- 78,4 79,16).
- h)  $1\Gamma\epsilon$  +  $33\Gamma$  (102,28)
- i) 10 + --- (49,14).

C1A cadences are invariably followed by a musical dot but never-save for one instance(3,9)- by any MeSi, the reason being that a C1A cadence is itself a substitute for a MeInt.

CA and C1A cadences are usually located at such points where the corresponding text has a full stop or a high point, as will be evident from the table below:

cadences	full stop (.)	high point (')	comma (,)	no sign	total
CA	73	42	44	6	164
ClA	5	20	19		46
Total	78	62	63	6	209

This means that the characteristic position of CA and C1A cadences is at the end of melodies and sections of melodies of all three modes.

If we investigate their occurrences at such points where the text has a comma we find that this happens:

- 1) When there are long stretches of text without any full stop or high point and a CA or a CIA is needed. In such cases the position of the CA or CIA is chosen with great care to avoid breaking the continuity of the text. Suitable positions are:
  - a) at the end of a clause that is paratactically joined to the following one by means of the conjunction  $\kappa\alpha\mathcal{C}$  (14,2. 24,13.44,11.49,11.64,9.69,5.72,9...).
  - b) at the end of a clause that is followed by a relative clause introduced by a relative pronoun like  $\delta\iota'\circ\delta,\delta\iota'$   $\{36,7.66,2.68,9...\}$
  - c) where a clause ends with an invocation like "Χριστέ ὁ θεός ἡμῶν" "Λόγε καί υἰέ", " "Οσιε πάτερ Συμεών" (9,2.12,3.21,7.38,6.65,5...).
- 2) When there are long stretches of text containing two or more phrases in apposition or asyndetically added paratactic clauses, like Σταυρέ του Χριστου, Χριστιανών ἡ ἐλπύς, πεπλανημένων ὁδηγέ,...ἐλέησον ἡμᾶς. In these cases the position of the CA or ClA is chosen at will by the melodist but care is always taken to produce symmetry (49,9.67,3.67,5.78,4.102,6..)
- 3) Finally this happens in some cases in which either the text tradition shows variant readings or the interpunction is probably erroneous. (3,5.3,8.11,7).

If we investigate the cases in which no grammatical punctuation follows we shall see that this is the case:

- a) in proems (33,3.38,2).
- b) when there is a long textual period without any fullstop or high point(18,9.24,9). In the second case(24,9), lines 10 and 11 are followed by high points. Here, the end of line 11 was considered suitable for a CA, but if a CA was placed also at the end of line 10 the result would be two CA separated by a very short interval only. This is why the end of line 10 has a CB on G while the CA is pushed back to the end of line 9 where the expression "τάς φυλάς τοῦ 'Ισραήλ" occurs.
- c) When a whole section is repeated unchanged (69,13). In this case the section 69,12/13 constitutes an exact repetition of 69,10/11.

d) The case 88,4 is difficult to interpret-probably the melodist intended to lend extra emphasis to the phrase "'Ιωάννης ὁ Πρόδρομος" by splitting it up.

#### CB:8 cases

For CB cadences on E the following formulas are used:  $1\Delta\alpha$ ,  $16\left[B\beta, \Delta(\gamma, \epsilon), E, H\delta, N\alpha\right]$ . CB cadences are followed by a musical dot and a MeSi, viz.  $y^{\alpha}$ ,  $\frac{1}{2}y^{\alpha}$ , or  $\frac{1}{2}$ . (65,1.66,1.79,19.84,1.91,17.95,4.111,6).

#### C1B:21 cases

For C1B cadences  $(E^G, E^E, E^D, E)$  the following formulas are used.

- a)  $1\Delta\vartheta$ ,  $16Z\gamma$ , 27B +10A $\alpha$  (84,14. 106,2. 67,1).
- b) 16Ξζ,51Λ +10Βγ ( 56,6. 95,1.- 88,11)
- c) 16Δδ +10Bδ (66,6)
  - d)  $7A\delta, 7\Gamma, 28 + 10Z\beta (102, 2. 55, 2. 44, 5.51, 3)$
  - e)  $16\Lambda\alpha$  +10H (95,9).
  - f)  $16(\Delta \epsilon, \Delta \zeta, M \delta, \Xi \alpha)$  +4E(\alpha, \beta, \gamma)(49, 1. 78, 2-17, 5.28, 1.-4, 6.11, 10)
  - g)  $1\Gamma\alpha, 16\Delta\gamma, 28$  +32A (79,8. 22,1.-69,2).

C1B cadences are followed by a musical dot but never by any MeSi. A comparison of CA and C1A cadences with CB and C1B cadences shows that they present the same characteristics though they differ as regards their position within the melodies.

CB and ClB cadences occur:

- a) at the end of prologues of melodies(22,1.28,1.49,1.55,2.65, 1.66,1.67,1.69,2.78,2.84,1.95,1.102,2.106,2).
- b) at the end of independent colons at the beginning of sections. Such colons occur in places where the melodist would seem to wish to throw the text into relief. (4,6.11,10.17,5.44,5.51,3.56,6.66,6.79,19.84,14.88,11.91,11.95,4.95,9.111,6).
- c) at the end of an E colon which is followed by another E colon whose cadence appears to be stronger (79,8).

#### CC 34 cases

For CC cadences on E the following formulas are used:

- a)  $1B\alpha$  (111,2)
- b)  $16\left[A\alpha,B(\alpha,\beta),\Delta(\gamma,\epsilon),E,Z(\alpha,\beta,\epsilon),M\vartheta\right]$  (21,12. 21,15. 23,1. 28,8. 33,4..in all 21 cases).
- c) 5A (68,15)

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d) 10Eγ(23,1. 33,1. 37,1)
```

- e)  $39(\alpha,\beta,\gamma)$  (64,1.64,5, -64,3.51,8.-106,1)
- f) 428 (51,7)
- g) 44a (48,3

CC cadences occur at the end of units of E colons(21 cases). They are never, in any of the above cases, followed by a MeSi. A musical dot is found to follow in 8 cases, at such points at which there is grammatical interpunction of the text(4,9.48,9.51,7.68,15.84,10.88,5.92,3.106,1), and in 4 further cases in which, it is true, no grammatical interpunction occurs, but the breaking up of the text does not create any difficulties of understanding(81,2.91,17.102,4.111,2).

#### C1C :22 cases

For cadences on E<sup>G</sup>, E<sup>F</sup>, E<sup>D</sup>, E. the following formulas are used:

```
a) 16(Mδ.Hε)
                     + 10A\alpha (27,3.- 72,16).
b) 5Γγ
                      + 10A\gamma (106,10).
c) 1HB
                      + 10B\alpha (35.1).
d) 1Δη,10Εγ
                     + 10B\beta (12,6.- 38,1)
e) 16E(\zeta,\eta),28 + 10B\gamma (35,8.- 81,11.- 84,7).
f) 16Δδ
                     + 10B8 (81,14).
g) 16Mδ
                     + 10FB (54,17).
h) 16Δγ
                     + 10\Gamma\gamma (35,10).
i) 7r
                      + 10Z\beta (90,1).
j) 7(Aδ,Γ)
                     + 10Z\gamma (18,12. 48,7. 103,11)
k) 16B(\beta,\gamma), Na
                     + 4EB (35,13- 51,13.- 72,14).
1) 1\Delta\epsilon, 28
                      + 32A (79,20.- 35,19).
```

+---- (88,1).

C1C cadences occur at the end of units of E colons(12 cases), G colons(8 cases) and a b colon (1 case). They are neither followed by a musical dot nor by any MeSi.

#### CADENCES ON G

CB:157 cases.

m) 16NB

For cadences CB on G the following formulas are used:

- a)  $2[A(\alpha,\beta,\gamma),B(\alpha,\beta),\Gamma,\Delta(\alpha,\beta),E(\alpha,\beta),Z(\alpha,\beta,\gamma,\delta),H(\alpha,\beta)]$  (3,13. 11,9. 18,7...in all 85 cases).
- b)  $8[A\alpha, B(\beta, \gamma), \Delta\gamma, E\beta]$  (3,6. 13,1. 24,2.... in all 31 cases).

- c) 1606 (33,7. 38,9. 51,4....in all 3 cases).
- d)  $18[A(\alpha,\beta),B\beta,\Delta(\beta,\gamma)]$  (9,5. 84,4. 88,6.....in all 17 cases)
- e) 20 (92,7. 1 case)
- f) 35 (27,8. 1 case)
- g) 51(A,Z,0) (48,11.51,8.68,1.79,10 4 cases)
- h)  $2\theta(\alpha,\beta)$ ,  $8(\Delta\alpha, E\alpha, Z\beta)$ ,  $18(B\alpha, \Gamma\alpha)$ ,  $17H\beta$ ,  $6A\beta$  +33A(B). (21,16.35,9.79,14.... in all 15 cases). CB cadences on G are followed by:
- a) musical dot +MeSi,viz.  $\ddot{y}$  (127 cases),  $\ddot{y}$  (13 cases,  $\ddot{y}$  (4 cases),  $\ddot{z}$  (1 case), making a total of 145 cases.
- b) MeSi  $\ddot{y}$  (2 cases) or  $\ddot{y}$  (3 cases) but no musical dot(28,6.33,6.81,3.106,6.111,8).
- c) musical dot but no MeSi(9,3.12,9.28,7.65,2.84,25.95,5.104,4. 110,9).

#### ClB:3 cases

For C1B cadences (G<sup>F</sup>.G<sup>b</sup>.G<sup>bc</sup>) the following formulas are used:

- a)  $2A\alpha + 16N\gamma$  (35,3).
- b) 51(Bβ,I) (29,16.65,11).

C1B cadences are followed by a musical dot but never by any MeSi.

An examination of the position of CB and C1B cadences relative to the text showed that:

- A) they are most often found at such points where the text has a grammatical comma(16,5.24,19.49,3...in all 95 cases.
- B) in 24 cases they are found at points where the text has a full stop or a high point. This happens:
- a) when another full stop or high point accompanied by CA or C1A is found close by, whether before or after (14,4.17,6. 22,5.29,15... in all 13 cases);
- b) when they occur at the end of a prologue (24,2.28,2) or before the epilogue, a position from which CA and ClA cadences are usually excluded (3,13.14,10.18,11);
- c) when the high point is followed by a relative clause which is so closely connected with the preceding clause that the high point could be replaced by a comma(38,8.92,7);
- d) when they occur in qualifying phrases like "τοῦ Παύλου συνόμιλε καί τοῦ Στεφάνου σύναθλε" which are equivalent to in-

dependent clauses added for the sake of emphasis (95,10);

- e) in one case (79,12) the MeSi; precedes; it probably introduces a kind of modulation that requires a resolution into G;
- f) finally, in two cases (3,6.11,9) there would appear to be variations in the text tradition.
- C) in 41 cases they are found at points where the text does not have any sign of interpunction. This happens when long stretches of text occur without any sign of interpunction and a CB or C1B cadence is needed. In these cases the position of the cadence is chosen with a view to avoid breaking up the continuity of the text(11,12.21,5.21,14.23,5... in all 41 cases).

#### CC:14 cases

For CC cadences on G the following formulas are used:

```
a) 8(B\gamma, E\alpha) (84,21.103,9).
```

- b) 12(Aγ,Eβ) (4,3. 55,12. 88,18).
- c)  $18\Delta\alpha$  (21,13)
- d) 35 (35,15).
- e) 51(A,0) (37,7.79,5.79,21).
- f)  $18\Gamma\alpha, 14A\alpha + 33A$  (56,10.— 37,11)
- g) 33A+50 (27,7).
- h) 28 (91,6)

They occur at the end of the last unit but one of G,E or b colons and are not followed by any musical dot (except in 5 cases, viz.4,3.37,11.79,21.91,6.103,9) nor by any MeSi.

#### C1C:92 cases

For C1C cadences on G<sup>a</sup> or G<sup>b</sup> the following formulas and combinations of formulas are used:

```
a) 2 \left[ \Delta \gamma, I(\alpha, \beta) \right]
                                                                     (24,10.-36,10,-12,4).
b) 8 \Gamma(\alpha,\beta,\delta,\epsilon,\zeta), Z(\alpha,\delta,\epsilon)
                                                                    (29,6. 34,2. 37,10.. 40 cases).
c) 12[\Gamma(\gamma,\delta),\Delta,E(\gamma,\delta,\epsilon)]
                                                                   (29,11. 44,3. 44,16...8 cases).
d) 16 Iô
                                                                     (34,7).
e) 17[(A\varepsilon, \Gamma\delta, \Delta(\gamma, \delta, \varepsilon)]
                                                                     (28,11. 38,10. 23,10..10 cases).
f) 18[A(\gamma,\delta,\varepsilon,\zeta)B\gamma,\Gamma\beta]
                                                                     (44,18. 56,18. 72,2...7 cases).
g) 34[B(\beta,\gamma),\Gamma\beta]
                                                                    (29,2. 33,16. 50,6....12 cases).
h) 8B\alpha, 9\Gamma\eta, 17\Delta\beta+24 [A(\gamma, \delta), B(\alpha, \gamma)]
                                                                  (16,2.66,14.78,9.91,3.91,19.97,7).
i) 8Bα,7Βγ,17Δβ,33A +11Γ(γ,ζ,η,θ)
                                                                     (35,4. 37,4. 54,2. 102,29).
```

j) 9Fn (55,14).

They occur at the end of the last but one unit of E colons (73 cases), G colons (6 cases), D colons (4 cases) and b colons (5 cases). Only in three cases do they occur at the end of the first unit of E colons consisting of three or more units (34,7.37,10.102,26). As a rule they are not followed by any MeSi or musical dot, though in 11 cases there is a musical dot(3,14.33,16.36,10.37,10.56,2.66,12.91,19.91,21.102,3.102,26.102,29), and in 5 cases a musical comma (12,11.13,2.13,5.23,10,24,10).

#### CADENCES ON a

#### CC:38 cases

For CC cadences on a the following formulas are used:

a)  $9[A\delta,\Gamma(\alpha,\gamma),\Delta\varepsilon,E(\alpha,\gamma,\zeta),Z(\delta,\varepsilon,\zeta,\eta)]$  (14,11.27.9.57,5...20 cases).

b) 15Be (12,1.12,2.44,1).

c)  $160\zeta$  (34,5).

d)  $17[A(\eta,\iota),\theta\alpha,I]$  (14,5.11,2.49,8...6 cases).

e) 34Aγ (17,7.22,10.24,3.81,5.84,26).

f) 51K (66,10).

g)  $53A(\varepsilon,\eta)$  (69,14.69,16).

They occur at the end of the last but one unit of E colons (29 cases) G colons (3 cases) and D colons (2 cases). In four cases (12,1.22,10.27,9.44,1) they occur at the end of the first or the second unit of E colons consisting of three or more units. They are not followed by any MeSi, nor by any musical punctuation, except for 4 cases in which a musical dot follows (34,5.66,10.102,12:104,5) and 3 cases in which a musical comma follows (11,2.22,10.54,3).

#### C1C:34 cases

For C1C cadences on a the following formulas are used:

a)  $4B(\alpha,\beta,\gamma,\delta)$  (13,9. 50,3. 54,8....in all 16 cases).

b) 8(Δβ, Hβ) (22,9. 56,22. 81,16. 95,11).

c)  $160\varepsilon$  (72,17. 102,32).

d) 17Ac (95.1).

e) 47 (27,2).

f)  $49(\alpha,\beta)$  (36,2. 49,6. 69,10...in all 8 cases).

g)  $51B(\alpha,\gamma)$  (37,14. 54,21).

They occur:

- a) at the end of the first unit of E colons(22 cases), G colons (2 cases), and D colons (4 cases);
- b) at the end of the second unit of E colons whose first unit has a CC cadence on E or a C1C on  $E^F$  or  $E^D$  (72,17.81,12.84,8.102,21).
- c) in other positions. This happens in two cases only (27,2. 54,16). These cadences are followed by a musical dot in 25 cases and by a musical comma in two cases, never by any MeSi.

## C A D E N C E S O N D

CB:27 cases

For CB cadences on p the following formulas are used:

- a)  $5[A(\alpha,\beta),B(\alpha,\beta)]$  (18,3. 23,2. 84,3...in all 11 cases).
- b)  $6[A(\beta,\gamma),\Gamma(\beta,\gamma)]$  (9,7. 56,9. 56,17....in all 11 cases).
- c)  $51[\Delta(\alpha,\beta),H]$  (29,14. 34,1. 34,12. 72,1. 72,4).

They occur at the end of D colons and are followed by a musical dot (except in one case, viz. 29,14). They are followed by the MeSi $\frac{\lambda}{0}$  in 11 of the cases enumerated sub a) and b); the absence of the MeSi in the remaining 12 cases is probably due to the fact that there is an enjambement in the text.

Of the cases enumerated  $\underline{\text{sub}}$  c) there are two in which the cadence is followed by the MeSi  $\ddot{y}$  (29,14.34,12), another in which it is followed by  $\ddot{y}$  (72,1) and two in which no MeSi occurs (34,1.72,4).

C1B :1 case

A C1B ( $D^a$ ) cadence is produced by formula 5B $\gamma$ . It is followed by a musical dot, but not by any MeSi (90,11).

CC:40 cases

For CC cadences on D the following formulas are used:

- a)  $5[A(\alpha,\beta),B(\alpha,\beta)]$  (16,7. 21,8. 22,2...in all 15 cases).
- b)  $6[A(\alpha,\beta),\Gamma(\alpha,\beta,\gamma),\Delta\alpha,E]$  (21,17. 33,5. 37,2..in all 16 cases).
- c) 10Z8 (22,11).
- d)  $27A(\alpha,\beta)$  (9,1. 48,1. 50,1. 51,1. 79,1. 83,1)
- e) 41 (33,9).
- f) 51E (33,2).

They occur at the end of the last but one unit of E or G

colons (37 and 6 cases respectively). Only in one case does such a cadence occur at the end of the first unit of an E colon (79,1). These cadences are followed by a musical dot in 10 cases but never by any MeSi.

### C1C:6 cases

For C1C cadences on Da the following formulas are used:

- a)  $5\Gamma\alpha$  (111,10).
- b)  $6(B\alpha, \Gamma\delta)$  (72,8.- 95,14. 103,7. 103,17).
- c)  $10Z\varepsilon$  (102,9)

They occur at the end of the last unit but one of an E colon (except in one case, viz.95,14). They are not followed by any MeSi, nor by any musical dot (except in one case, viz.103,17).

## CADENCES ON b

### CB on b:25 cases

For CB cadences on b the following formulas are used:

- a)  $4[A(\alpha,\beta,\gamma,\delta,\epsilon),\Gamma(\alpha,\beta,\gamma)]$  (14,7. 16,4. 21,10. 36,8. 66,3. 68,10 in all 22 cases).
- b) 11H (57,1).
- c)  $13A\beta$  (55,9).
- d)  $29A\gamma$  (4,1).

A musical dot follows except in five instances (49,2.72,10.84,20.92,11.110,5) and so does a MeSi, viz.  $\hat{y}$  (57,1),  $\hat{\pi}\hat{y}$  (102,23) or  $\hat{\pi}\hat{y}$  (4,1.55,9.66,3.88,16...in all 13 cases).

The MeSi is missing in 10 instances (16,4.44,8.49,2.68,10.72,10.84,20.90,8.92,11.104,3.110,5). More details of these cases are given on pp. 76-77.

### C1B on b :13 cases

- a)  $13(A\gamma, \Delta\beta, E\gamma)$  (3,12. 11,4. 55,11. 56,3. 66,4. 68,11. 104,2).
- b)  $13E\delta + 34\Gamma\gamma$  (17,10).
- c)  $13\Delta\alpha + 15A\delta$  (54,14).
- d)  $29(A\beta, B\alpha, B\beta)$  (18,2. 24,12. 103,1).
- e) 59B (54,15).

ClB on ba :10 cases

- a)  $13[\Delta(\alpha,\gamma),E\beta]+30A$  (4,2. 29,3. 37,8. 37,9. 54,20. 54,24. 57,4).
- b) 29  $A\alpha + 30A$  (54,1).
- c) 55(A,B),+30A (90,5. 102,25).

 $C1B ext{ on } b^d : 1 ext{ case}$ 

11A +4Z (103,3).

C1B cadences on b, ba and  $b^d$  are followed by a musical dot (except for 4 instances, viz. (54,1.54,24.66,4.90,5) but never by any MeSi.

They occur at such points where the text has a high point (4 cases), a comma (12 cases) or no sign of interpunction at all (8 cases).

CC on b: 24 cases

For CC cadences on b the following formulas are used:

- a)  $11[A(\alpha,\beta,\gamma),B\alpha,\Gamma(\alpha,\beta),E]$  (3,6. 11,8. 14,3. 102,16...19 cases).
- b)  $13(A\alpha, B\alpha)$  (13,7. 97,1).
- c) 22A (103,4).
- d)  $29A\alpha$  (48,5).
- e) 58 (54,6).

Except for a single instance (97,1) they are neither followed by a musical dot not by a MeSi.

C1C on b :11 cases

- a)  $11[B(\gamma,\delta),\Delta]$  (3,1. 18,1. 38,3. 48,5. 54,5. 55,1. 65,8.65,12)
- b)  $11B\alpha + 15A\delta$  (54,12)
- c) 29(By,F) (27,1. 33,11)
- C1C on ba :2 cases
- a) 11B8+30A (11,1)

b) 30B8 (13,4) C1C on b<sup>C</sup>:2 cases

a) 11 B $\epsilon$ +15B $\alpha$  (24,7.56,1.92,1).

C1C on b<sup>G</sup>:2 cases

a) 15Eα (24,1.102,1)

 $\underline{\text{C1C}}$  cadences on b, b<sup>a</sup>, b<sup>c</sup> and b<sup>G</sup> are not followed by a musical dot except for four instances (3,1.11,1.24,7.38,3) nor by any MeSi.

### CADENCES ON d

CC on d:6 cases

The following formulas produce CC cadences on d:

- a) 4\Delta (55,10.66,9)
- b)  $45(\alpha,\beta)$ . (17,10.97,9)
- c) 54 (66,4)
- d) 62 (79,11)

No musical dot follows (except in two instances, viz (55,10 66,9) nor any MeSi.

TABLE\_OF\_CADENTIAL\_FORMULAS
WITH\_THE\_NUMBER\_OF\_THEIR\_OCCURRENCES,
ARRANGED\_ACCORDING\_TO\_MODES

	Deu	teros	Pl.De	uteros	Nenano		
CADENCES	cases	%	cases	%	cases	%	
CA E	71	18.78	75	22.25	17	19.31	
Cla EG	8	2.11	2	0.59	2	2.27	
$_{ m E}$ F	6	1.58	7	2.07	2	2.27	
$E_D$	4	1.05	6	1.78	2 :	2.27	
Е	2	0.52	4	1,18	_	_	
total	91	24.04	94	27.87	23	26.12	
CB E	3	0.79	4	1.18	1	1.13	
ClB EG	4	1.05	2	0.59	- 1	-	
$\mathbf{E}^{\mathbf{F}}$	-	-	3	0.89	-	_	
$E_D$	2	0.52	4	1.18	1	1.13	
E	4	1.05	1	0.29			
total	13	3.41	14	4.13	2	2.26	
CC E	8	2.11	23	6.82	3	3.40	
C1C EG	_	-	2	0.59	1	1.13	
$\mathbf{E}^{\mathbf{F}}$	1	0,26	3	0.89	2	2.27	
ED	3	0.79	5	1.48	-	_	
Е	4	1.05	1	0.29			
total	16	4.21	34	10.07	6	6.80	
CB G	74	19.57	60	17.80	23	26.23	
ClB GF	-	<u> </u>	1	0.29	- }	_	
$^{\mathrm{Gb}}$	-	-	1	0,29	-	-	
Gbc	1	0.26	-	-	_		
total	75	19.83	62	18.38	23	26.13	
CC G	6	1.58	7	2.07	1	1.13	
C1C Gª	47	12.43	30	8.90	11	12.50	
Gр	2	0.52	2	0.59		i i	
total	55	14.53	39	11.59	12	13.63	

	Deut	eros	Pl.De	euteros	Nei	nano
CADENCES	cases	%	cases	8	cases	8
CB D	10	2,64	12	3,56	5	5,68
ClB Da	1	0.26	- ;	_	_	! –
total	11	2.90	12	3,56	5	5.68
CC D	7	1.85	29	8.60	4	4.54
C1C Da	3	0.79	1	0.29	2	2.27
total	10	2.64	30	8.89	6	6.81
CC a	24	6.34	14	4.15	-	_
C1C a	16	4.23	13	3.85	4	4.54
total	40	10.57	27	8.00	4	4.54
св ь	12	3.17	8	2.37	5	5.68
C1B b	11	2.91	-	_	1	1.13
Ъа	9	2.38	2	0.59	- 5	-
₽q	1	0.26	-	-	-	_
total	33	8.72	10	2.29	6	6.81
сс ь	18	4.76	6	1.78	1	1.13
сіс ь	6	1.58	6	1.78	-	-
ъа	1	0.26	- :	_	- !	_
Ъc	4	1.05	-	-	-	-
ъG	2	0.52	!		_	i -
total	31	8.17	12	3.56	1	1.13
cc a	3	0.79	3	0.89	_	-
total	3	0.79	3	0.89	_	
TOTAL	378	99.81	337	9 <b>9.</b> 87	88	99.91

### MELISMATA - THEMATISMOI

### I. Melismata

In spite of being more expressive and ornamented than those of the Hirmologion, the melodies of the Sticherarion are basically simple, almost syllabic. Yet on certain occasions they contain melodic lines with special embellishment. Such lines, as distinguished from the common simple ones, are called melismata. The reason why such melismata are used is evidently the desire of the melodist to highlight words or phrases which he considers particularly important.

The melodies investigated contain 21 cases of melismata (see formula No. 51), distributed as follows: Deuteros mode 4 cases, Plagal Deuteros 13 cases, Nenano 4 cases. Whether the apparent predominance of the Plagal Deuteros mode is due to sheer chance or not could be established by investigating the other melodies of the Sticherarion.

Some of the melismata have two or more occurrences, which means that they constitute formulaic melismata repeated whithout change in suitable positions (see 51A, $\Delta$ ,0). Others occur once only, which means that they are particular compositions of the melodist for each individual case. To establish when this is the case further inquiry into the other melodies of the Sticherarion will be needed.

As regards the position of the melismata within the melo - dies we observe that they occur:

- a) at the beginning of melodies (34,1.68,1.72,1).
- b) at the beginning of sections (29,14.34,12.65,10/11.72,4.88,11).
- c) at the beginning of a colon (103,6).
- d) at the end of the first unit at the beginning of a section (79,5):

- e) combined with formula No. 19 (ouranisma) at the end of colons or units (29,16.37,14.54,21).
- f) at the end of the last but one unit of E colons (33,2.66,10.79,21).
- g) at the end of colons, usually at the beginning of sections (48,11.51,8.79,10).

# II. Thematismoi<sup>1</sup>

Concerning the thematismoi the monk Gabriel (codex Laura 610) 2 says this:" 'Ο δέ θεματισμός ὁ ἔσω καί ὁ ἔξω, ἀπό τῆς σχηματογραφίας εἰσί δῆλοι. Θῆτα γάρ τό στοιχεῖον ἐκάτερον καί διά ταύτης ἄγεται εὐθεῖα, ῆς τό τέλος εἰ μέν ἔσω κάμπτει ὁ ἔσω γίνεται θεματισμός εἰ δέ ἔξω, δηλοῖ τρεῖς φωνάς εἰπεῖν, ὁ δέ ἔσω δύο. 'Ομοίως καί τό θές καί ἀπόθες, καί ταῦτα δύο θῆτα εἰσίν ἐχόμενα ὑπό μιᾶς γραμμῆς καί διά τοῦτο θές καί ἀπόθες δηλοῖ γάρ τήν θέσιν τοιάνδε ποιεῖν".

From the above passage the following may be gathered:

- a) The origin of the term "thematismos" is the symbol used to indicate the musical figure (thesis),i.e. a capital theta (0), this being an abbreviation of the word  $\vartheta \dot{\epsilon} \mu \alpha$ .
- b) the thematismos exo indicates a melodic ambitus of three tones, i.e. one fourth. It is symbolized by means of a-e-with the right end of the horizontal stroke bent upwards.
- c) The thematismos eso indicates a melodic ambitus of two tones, i.e. one third. It is symbolized by means of a so with the right end of the horizontal stroke bent downwards.
- d) The thematismos "thes-kai-apothes" is symbolized by means of a double theta with a common horizontal stroke: -00

In the melodies investigated the following types of thema-

See Egon Wellesz, A history of Byzantine music and Hymnography, Oxford 1961, p.296. Konstantin Floros, Universale Neumenkunde, vol. I, Kassel 1970, pp.252ff. H.J.W.Tillyard. Handbook of the Middle Byz. Notation, p.27

<sup>2)</sup> P.Lorenzo Tardo, L'antica melurgica bizantina, Grottaferrata 1938, pp. 194-195.

The description given by Gabriel leaves no doubt that type (5) is the thematismos "thes-kai-apothes" while type (6) is another form of the same thematismos in transposition.

Investigating the types 1,2,3 and 4 we observe that the symbol—O is of no use for the purpose of dividing them into "eso" and "exo" as its horizontal stroke is neither bent upwards nor downwards. We can however, obtain some help from the fact that type (1) covers three tones, i.e. one fourth while types 2,3,4 cover two tones. i.e. one third.

This division is supported by the evidence of later manuscripts which under type (1) have the symbol— while they have the symbol— under types 2,3 and 4. (See MS Sinai 1237 from the 15th c.).

On the basis of the above evidence the thematismoi were classified as follows:

- A) Thematismos exo formula  $4A(\alpha,\beta,\gamma,\delta,\epsilon)$ .
- B) Thematismos eso formulas  $4B(\alpha,\beta,\gamma,\delta).4\Gamma(\alpha,\beta,\gamma).4\Delta(\alpha,\beta)$ .
- C) Thes-kai-apothes formulas  $4E(\alpha, \beta, \gamma)$ . 4Z.
- A) Thematismos exo

The thematismos exo is followed:in 6 cases by a musical dot and the MeSi $\pi \ddot{y}$  or  $\pi \ddot{y}$  (14,7.21,10.29,9.36,8.66,3.102,23);in 5 cases by a musical dot alone (16,4.44,8.68,10.90,8.104,3); in two cases neither by a musical dot nor by a MeSi(84,20.92,11).

The interpretation of these data is by no means easy and

evident. But of all possible interpretations I submit that one that can be supported by considerations of metre and sense of the text must possess the highest degree of probability.

Let us first investigate the cases in which the thematismos exo is found at the beginning of a section.

In case (1) the first syllable after the thematismos carries a metrical stress. Consequently we have two adjacent stressed syllables between which a metrical caesura arise. This can be covered by means of a pause. Consequently the existance of a MeSi at the caesura point is acceptable (cf.also29,9, 36,3.66,8.102,23).

In case (2) the first syllable after the thematismos may be considered either stressed (2a) or unstresses (2b). However, it would be most correct to consider it unstressed, as the rhythmical flow is best preserved in that way. In order, then, to avoid misinterpretation a musical dot is used, but no MeSi (16,4.68,10.90,8).

In case (3) the rhythm proceeds in a regular fashion. Hence there is no need for a musical dot, nor for a MeSi(84,20.92,11).

If we look into the remaining cases, in which the thematismos exo occurs at the end of complete b colons, we observe that if there is a natural break in the text the thematismos is followed both by a musical dot and a MeSi(14,7); otherwise there is just a musical dot (44,8.104,3).

# B) Thematismos eso

The thematismos eso occurs in three forms:

I) The thematismos eso with a cadence on b (formula 4 Γ(α, β, γ)

It occurs at the end of complete b colons It is followed; in 6 cases by a musical dot and the MeSi $\pi \ddot{y}$ , in 3 cases by neither. As was the case with the thematismos exo this must probably be explained with reference to the metrics and the sense of the text. We observe, then, that musical dot+MeSi occur:

- a) When at the point of the thematismos there is a natural break in the text, indicated by means of a comma(11,11.18,10.22,7) and
- b) When although there is no natural break a metrical caesura arises because the first syllable after the thematismos is stressed (35,2.65,6.88,16).

In the remaining cases, in which there is neither a natural break nor a metrical caesura, neither a musical dot nor a MeSi occurs (49,2.72,10.110,5).

2) Thematismos eso with a cadence on a ( formula  $4B(\alpha,\beta,\gamma,\delta)$ 

In 11 cases the thematismos (2) occurs in combination with formula No. 19 which constitutes the so-called ouranisma (12,10 13,9.54,8.54,16.56,8.56,16.68,8.68,17.81,9.88,22.103,16). In these cases the ouranisma is invariably preceded by formula No. 9. or by the combination 9+36 and a CB cadence on G. Thus the complete musical line will have the form:CB cn  $G\ddot{y}$  9+(36)+19+  $4B(\beta,\gamma,\delta)$ .

In four cases in which the unit of the thematismos is preceded by  $\text{ClA}(E^D, E^F)$  or CC(E) the thematismos is not linked to the ouranisma but to other formulas or groups of formulas, such as  $10B\alpha(\beta)$ ,  $10Z\gamma+17\Lambda\gamma$ ,  $6\Gamma\alpha+17\Delta\beta$ , (50,3.64,8.79,17.102,21). Finally in one case the thematismos in question is linked to the formula (melisma) No.51 $\Gamma$ (103,6).

As regards its position within the melodies, the thematismos (2) is found in two cases at the beginning of a section (50,3.64,8), in one case at the end of the last unit but one of an E colon(102,21), and in the rest at the end of the first

unit of E or D colons. The thematismos (2) is always-save for one case (88,22) - followed by a musical dot, but never by any MeSi.

3) Thematismos eso with a cadence on d (formula  $4\Delta\alpha,\beta$ )

In 55,10 it occurs at the end of the first unit of a b colon, in 66,9 at the end of the first unit of an F colon. It is followed by a musical dot but not by any MeSi.

C) Thematismos thes-kai-apothes. (formula  $4E(\alpha,\beta,\gamma)$ 

The thematismos thes-kai-apothes has 19 occurrences in the melodies investigated, being attached to the end of cadencial formulas like  $1(A\beta, \Gamma\beta, \Delta\beta, \Delta\zeta, E\beta, Z\beta)$ ,  $16(B\beta, B\gamma, Z\zeta, M\delta, N\alpha, E\alpha)$  after which it forms leading-on cadences on  $E^G$ .

The thematismos is followed by a musical dot -except for three instances (35,13.51,13.72,14), but never by any MeSi.

As regards its position within the melodies the thes-kai-apothes thematismos occurs a) at the end of sections (3,3.18,5.24,9.72,9.78,6.88,15.97,4.102,6.103,2.103,13);b) at the end of colons (4,6.11,10.17,5.28,1.49,1.78,2);c) at the end of units (35,13.51,13.72,14).

### SIGNATURES

Main Signature	М	аi	n	S	i a	n	а	t	u	r	е	9
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	MSi	First note of following formula		Total number of cases
1	ÿ	G	3,1.4,1.12,1.54,1.56,1.57,1.92,1.	7
2	ÿ	E	27,1.29,1.44,1.103,1.	4
3	ัซ <sup>์</sup>	Ъ	11,1.13,1.14,1.17,1.18,1.24,1.55,1.81.1.90,1 91,1.97,1.102,1.104,1.	13
4	ÿ́	Ъ	28,1.	1
5	ने मुं	E	9,1.22,1.23,1.33,1.37,1.38,1.48,1.50,1.51,1. 64,1.65,1.78,1.79,1.83,1.95,1.106,1.	16
6	πÿ	G	21,1.36,1.	2
7	Try	a	67,1.	1
8	7 3 C	G	34,1.	1
9.	介ÿ	D	35,1.49,1.66,1.84,1.	4
10	my - 3	С	69,1.	1
11	73'	a	16,1.72,1.88,1.110,1.	4
12	مر الم	a	68,1.111,1.	2

#### Observations:

## I. Main Signatures of the Deuteros Mode

A. As will be seen from the above table the melodies of the Deuteros mode may begin with either  $\ddot{y}$  +G or E (cases 1 and 2), or  $\ddot{y}$ +b (case 3), or  $\ddot{y}$ +a(b) (case 4). So the question must be asked: what are the criteria by which the MSi and the beginning of a melody of the Deuteros mode are determined? The answer to this question can hardly be given in the form of general and exact rules, which could only be formulated after a review of a larger number of instances. Nonetheless I think that certain observations made on the present material may suggest the outlines of the answer.

In my opinion the accentuation and metrical shape of the text constitute a basical criterion.

Examples:

In case (a) the strong accentuation of the text occurs at the beginning of the second metrical foot, while in case (b) it occurs at the beginning of the third foot. Thus in case (a) the melody begins on a  $\underline{G}$  with a weak accentuation in the first metrical foot and proceeds to a b with a strong accentuation in the second foot. In case (b) the melody begins on an E with a weak accentuation in the first foot, proceeding to a G with a stronger accentuation in the second foot and finally to an ab with a very strong accentuation in the third In cases (c), (d) and (e) the strong accentuation occurs at the beginning of the first foot and the melody begins on a b .

The above observations allow the following conclusions:

- a) If the strong accentuation occurs at the beginning of the first foot, the melody begins with y + b, or y + a or b.
- b) If the strong accentuation occurs at the beginning of the second foot, the melody begins with  $\ddot{y}$  +G.
- c) If the strong accentuation occurs at the beginning of the third foot the melody begins with y +E.

B) As regards the  $MSi\overset{\circ}{y}$  (case 4) we observe: As a MSi or MeSi the sign  $\overset{\circ}{y}$  is encountered before the formulas 7(A6,B6,r) and 28 (28,1.35,10.35,19.49,16.51,6). But on other occasions the same formulas are found preceded by MSi or MeSi Tor The explanation, I think, is that y replaces and many when a cadence of G precedes instead of one

on E. In the present case (28,1) the reason why the MSi  $\ddot{y}$  was employed is the fact that a melody of the Deuteros mode precedes it.

## ii. Main Signatures of the Plagal Deuteros mode

In the P1. Deuteros mode the variations in the use of MSi are greater (cases 5,6,7,8,9,10). The MSi in question no doubt constitute a compressed form of Main Intonations, as follows:

The difficulty of giving general and exact rules concerning the criteria governing the beginning of a melody and the choice of a suitable MSi is no less here than was the case with the MSi of the Deuteros mode. But here too I wish to present certain observations which may contribute to the solution of the problem.

a)	πÿ	≝ υ' ≐ υ' ≝ υ βά σι μον κρη πῖ δα	23,1. 33,1. 37,1. 38,1. 51,1. 64,1. (22,1)
ъ)	त्तेयु	υ'≝ υ'≟ υ'≝ υ ὁ πνεύ μα τι ἀ γί φ	9,1. 48,1. 50,1. 79,1. 83,1. 106,1.
c)	ลิซู	ύν το	78,1.
d)	नेयु	≟ υ υ'≝ υ υ'≟ υ ὁ τε τρα πέ ρα τος κό σμος	65,1. 95,1.
e)	मेयुर	υ υ'≝ υ υ'≝ υ υ ὑε ρεύς ἐν νο μώ τα τος	21,1. 67,1.
f)	तेयु <b>ः</b>	≝ υ¹ - υ¹ - υ¹≝ σή με ρον στει ρω τι καί	36,1.

g)  $\hat{\pi}\hat{y}^{\mu}$   $\hat{y}^{\mu}$   $\hat{$ 

h) πg-3, σή με ρον προ έρ χε ται

i) 市ップロ +Melisma 34,1.

#### Observations:

- a) Two-mora rhythm, accentuation in the first and the third foot beginning with  $\widehat{\pi}\, \ddot{y}$  +E.
- b) Two-mora rhythm (in three cases the second foot consists of three moras), accentuation in the first and third foot, one unstressed syllable at the beginning of the verse, beginning with  $\hat{\pi} \, \hat{y}$  +E. On the stressed syllable of the first foot the melody may remain on the E (79,1.83,1.106,1) or ascend to a G (9,1.48,1.50,1).
- c) Two-mora rhythm with the exception of one three-mora foot, with the strong accentuation preceded by two feet without accentuation, beginning with  $\widehat{\pi}\widehat{y}$  +E.
- d) Three-mora rhythm, strong accentuation in the second foot, beginning with  $\vec{\pi} \, \vec{y}$  +E.
- e) Three-mora rhythm, accentuation in the second and third foot, two unaccentuated syllables at the beginning of the verse, beginning with  $\Re \vec{y}$ +G.
- f) Two-mora rhythm, accentuation in the first and fourth foot, beginning with  $\widehat{\pi} \widehat{y}$  + G.
- g) Three-mora rhythm, strong accentuation in the first foot, beginning with  $\pi \ddot{\eta} + D$ .
- h) Two-mora rhythm with a three-mora foot in the third place, accentuation on the first and third foot, beginning with a c.
- i) Melisma, beginning with  $n \vec{y}$ .

# Conclusion:

A) Beginning with  $\tilde{\pi} \tilde{y}$  +E. a) when the rhythm is a two-mora one (often with one three-mora foot without accentuation between the two accentuated feet) and the accentuation occurs on the first and third foot. In such cases where an unaccentuated syllable occurs at the beginning of the verse the melody starts on E, remaing on the E or ascending to a G on the first accentuated syllable.

- b) When the rhythm is a three-mora one and two unaccentuated feet precede the strong accentuation.
- c) When the rhythm is a three-mora one, and one unaccentuated foot precedes the strong accentuation.
- B) Beginning with TY+G. a) When the rhythm is a three-mora one, and the accentuation is on the first and second foot, and one or two unaccentuated syllables occur at the beginning of the verse.
- b) When the rhythm is a two-mora one and the accentuation is on the first and fourth foot.
- C) Beginning with  $T_{j} + D$ . When the rhythm is a three mora one, and the accentuation is on the first foot, and two unaccentuated syllables occur at the beginning of the verse.
- D) Beginning with  $\pi y^{-2}+C$ . When the rhythm is a two-mora one but the third position is occupied by a three-mora foot and the strong accentuation is on the first and third foot.
- E) Beginning with  $\widehat{H}_{2}^{\infty} + G$ . There is only one instance of this (34,1) and the melody begins with a melisma.

# iii. Main Signatures of the Nenano mode

The melodies of the Nenano mode begin with Ty case 11) or case 12).

Whether the one or the other MSi is preferred depends in my opinion on the preceding melody. That is, if the preceding melody is one of the Pl. Deuteros mode the MSi employed is modes the MSi  $\pi$  . But if the preceding melody belongs to any of the other modes the MSi $\pi$  will be employed. (Concerning the MSi which in my opinion replaces the MSi $\pi$  when a melody of the Deuteros mode precedes, see "Main Signatures of the Deuteros mode, B"above p. 81).

# Medial Signatures

The following table shows all the medial signatures that occur in the melodies under investigation. They are found between two colons or two sections and consequently they are always preceded by a cadence and followed by an opening formula.

In general the MeSi fall into three classes:

A) MeSi which act both ways, i.e. which indicate the last note

	ı		- 1	35 -	
	Total number of cases	122 4 1 1	15 15 1 1	7 7 7 7 7 7 7	1
	al ber	18 1	7	е н	
	Nenano mode Sample Total cases number	162.165.169. 682. 72,2	6815.8820.	16,7.111,4.111,10. 88,17	7214.1115.1117. 6814.885.885. 8821. 687.
	ros Total number	46 1 3	: ::	25 5	ა დ თ თ - H - H
res	P 1.D e u t e r m o d e Sample To cases nu	96.213.216. 226. 69.8. 3510.3519.516.	49,16 487.679.8416 652.6510.669.842 377.7910.	9,3.3315.34,7. 2111.228.35,3.	95.224.344 214.358.3513. 235.334.364. 844.8418.10615. 9,8. 79,11
atı	s Total number	58 2 1	ത ന ന പ	H H C H H	11 13 6 6
I Sign	Deuteros mode Sample T cases nu	33.35.37. 145.5514. 3,9	1411.1812.287. 1710.5424.559. 5412.905.10211. 29,17.	57,2 124.134.24,7. 33,6 42.1112.148. 66,4	114.9713.10232. 56,20. 102,24 46.143.147. 8111.8114. 184.5610.5618. 114.137.927.
Media	Elements connected by the MeSi	colons colons sections sections colons	colons colons 14,11.18,12.28, sections/colons17,10.54,24.55, sections 54,12.90,5.102,1 colons colons	colons 57,2 sections/colons124.134.24,7. sections 33,6 colons 4,2.11,2.14,8. colons 66,4 colons 18,11	sections sections colons sections colons colons sections
	First note of following formula	G d.conf. G+conf. G+conf. G+conf.	a b tconf. b tconf. b b tconf. Gtconf.	о о о и и о	G+conf. G d+conf. a+conf. D C+conf. d+conf.
	MeSi	יבי ובי ובי ובי ובי ובי ובי ובי ובי ובי	العرضية التاريخ التاري التاريخ التاريخ التاري	さいこう さいこう	1
	Preceding cadence	оон <mark>н Со</mark>	<b>о</b> оы н е е	<u> </u>	6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6
	Pre	1 CB 2 CB 3 CA 4 CIA 6 CB	7 CB 8 CB 10 CA 11 CB	8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	19 CA 20 CA 21 CB 22 CA 23 CA 24 CB 25 CB 26 CB

of the preceding cadence as well as the initial note of the opening formula that follows (cases:1,6,7,8,14,16,19,20,21,22,23,24).

### Observations:

a) If the two notes, i.e. the last of the cadence preceding the MeSi and the first of the following opening formula, are of different pitch, a confirmatory neume having exactly the same quantitative and qualitative value as the note it stands above (cases:6,8,19,21,22) is written in rubro above the second note.

If the two notes are of the same pitch, there is no confirmatory neume (cases 1.7.14,16,17,23,24).

- b) The formulas  $7(A\delta, B\delta)$  and 28 are preceded by the MeSi y in case 6 and 7. Elsewhere the same formulas are preceded by either of the MeSi y and y. This means, I submit, that the MeSi y is employed instead of y or y when the preceding cadence is on G instead of E.
- c) In case 7,20 and 23 we observe that at the end of the cadence that precedes the MeSi one or more neumes are added as a kind of tail carrying the melody to the same pitch as the beginning of the following opening formula. In such cases no confirmatory neume is employed. A comparison of these cases with the corresponding ones that have no tail (6,19,22) indicates that this happens when the first syllable of the opening formula has grammatical and metrical accentuation, or at least the latter.
- B). MeSi which act forwards only, i.e. which indicates the beginning of the following opening formula but not the end of the preceding cadence (cases: 3,4,5,9,10,11,12,13,26,27).

### Observations:

- a) The above MeSi are used:
  - i) When cadences on low notes (E,D) are followed by opening formulas beginning on high notes like b or d (cases:9,10,11.27).
- ii) When cadences are followed by opening formulas beginning on a note which cannot be indicated by means of any of the MeSi that act both ways (4,5,12,26).
- b) Instance 10 is covered by the remarks above sub A.c.

c) In case 3 we find MeSi  $\ddot{y}$  +confirmatory neume between a CA on E and opening formula beginning on G. In other similar cases we find MeSi  $\ddot{\pi}\ddot{y}$  +conf. What deserves attention is the fact that in the same melody (No 69) the two sections 6-7 and 8-9 are absolutely identical. Nonetheless we find MeSi  $\ddot{x}\ddot{y}$  +conf. at the beginning of the first and MeSi  $\ddot{y}$  +conf. at the beginning of the second. This observation prompted me to look up these instances in other manuscripts which have the following MeSi in the corresponding positions (69,6. and 69,8):

It thus appears that the majority of the manuscripts agree on considering MeSi  $\ddot{y}$  +conf. as the most appropriate alternative at 69,6 and 69,8.

The MeSi  $\hat{\pi}\hat{y}$  of MS Sinai 1230 (69,6) is no doubt correct. Nevertheless I submit that MeSi  $\hat{y}$  +conf. would be more appropriate, as at (69,8) since formula No. 9 follows, this formula being always preceded by MeSi  $\hat{y}$  except for the present case. d) In case 13 we find the MeSi  $\hat{y}$  between a CB on b and an opening formula starting on b (57,2). The manuscripts Sinai 1224,1228 and 1231 have no MeSi whereas Sinai 1585 and Jerusalem Photiou 30 have  $\hat{\pi}\hat{y}$ . Finally Sinai 1216 has  $\hat{y}$  +conf.

It thus appears that there are two possibilities:either, to put in no MeSi at all, or to put in one of the two MeSi $\ddot{y}$ +conf. and  $\ddot{\pi}\ddot{y}$ . The MeSi $\ddot{\pi}\ddot{y}$  on b presupposes a descending melodic movement, viz.  $\underline{dcb}\,\ddot{\pi}\ddot{y}\,b$  (see case 16), while MeSi $\ddot{y}$ +conf.presupposes an ascending one (see cases 8,9,10,11). In the instance under investigation (57,1) the melodic movement  $\underline{GGbaGcab}$  may be interpreted as either ascending or descending due to the presence of the note c. I submit that this is the reason why the MeSi $\ddot{y}$  is preferred in some manuscripts and  $\ddot{\pi}\ddot{y}$  in others.

MS Sinai 1231 does not in general employ confirmatory neumes
 It cannot be clearly seen if MS Sinai 1585 has a confirmatory neume at 69,6.

e) In case 4 we find MeSi  $\ddot{g}$  +conf. between a ClA on  $E^D$  and an opening formula starting on G (3,9). This is the sole instance in the melodies under investigation of a MeSi being put after a leading-on cadence.

The manuscripts Sinai 1224 and 1231 have no MeSi. Jerusalem Photiou 30 has  $\ddot{y}$  +conf. and Sinai 1585  $\ddot{\eta}$   $\ddot{y}$ .

It thus appears that the most normal procedure is not to use a MeSi after the leading-on cadence. If, however, the presence of a MeSi is judged indispensable  $\ddot{y}$  +conf. is the most suitable one. This interpretation is supported by the fact that the opening formula which follows (No. 11) is never preceded by any other MeSi than  $\ddot{y}$  (though there may be none). As regards the MeSi  $\dot{m} \dot{y}$  of MS Sinai 1585 it should be noticed that it cannot be considered an error as it expresses the leading-on cadence.

f) in case 12 (34,13) we find the MeSi  $\ddot{y}$  +confirmatory ison between a CB on D and an opening formula starting on G (112)

None of the manuscripts Sinai 1224, 1228 and Jerusalem Photiou 30 has any MeSi. Sinai 1216 and 1231 have  $\ddot{y}$ , while Sinai 1585 has  $\frac{1}{2}\ddot{y}$ .

It thus appears that it is possible to use one of the MeSi  $\ddot{y}$  and  $\ddot{\eta}\ddot{\psi}$  or not to use any at all.

In case like this we must consider the MeSi  $\ddot{y}$  +conf.(34,13) an error. However, investigating the melodies of MS Sinai1230 I have found it to contain fewer errors than theothers: Consequently the possibility of another solution must be tried.

After the MeSi  $\ddot{y}$  in question there is a confirmatory neume which in the present case is a red ison. We have already noticed (see A.a above) that a confirmatory neume receives the quantitative and qualitative value of the initial note of the formula above which is placed, e.g.

formula above which is placed, e.g. (4,6), (11,4), (13,7), (14,11), (35,10).

But in the present case (34,13) the confirmatory ison that is placed over the initial note  $\frac{1}{2}$  is an  $\frac{1}{2}$  instead of an  $\frac{1}{2}$ . I submit that this means that in the case in question the red ison is not just a confirmatory ison but also a red variant<sup>1</sup>.

<sup>1.</sup> See <u>J. Raasted</u>:Intonational Formulas and Modal Signatures in Byz.mu-sical manuscripts, Subsidia VII, Copenhagen 1966 p.138 note 124

This being so the opening formula that follows the MeSi  $\ddot{y}$  is susceptible of two readings, viz:

It thus appears that the MeSi y belongs to the red variant and consequently is no error.

C) <u>MeSi which act backwards only</u>. i.e. which indicate the end of the preceding cadence without indicating the beginning of the formula that follows (cases: 2,15,17,18,25).

### Observations:

a) In the instance 18 the MeSi  $\widehat{\pi}\widehat{y}$  occurs between a CB on b and an opening formula starting on d (18,11).

The same reading is found in MSS Sinai 1585, Jerusalem Photiou 30, Paris 265. MS Sinai 1231 has  $\ddot{y}$ , Sinai 1216  $\ddot{y}$ , Sinai 1223  $\ddot{\pi}\ddot{y}$ +conf., while Sinai 1224 and 1228 do not give any MeSi.

It thus appears that the position in question may be occupied by: i) $\hat{n}\hat{y}$ , ii)  $\hat{y}$ , iii)  $\hat{y}$ , iv) $\hat{n}\hat{y}$ +conf.,v) nothing.

Cases (i), (iv) and (v) may be considered normal. It may also be possible to consider (ii) as normal on the supposition that the MeSi acts backwards only, i.e. that it indicates the note b of the preceding cadence. Certainly, as the melodic movement of the cadence is descending the MeSi $\hat{\pi}\hat{y}$  would suit better, but  $\hat{y}$  cannot be considered completely wrong.

The MeSi  $\ddot{y}$  (case iii) gives rise to great difficulties. If it were followed by a confirmatory neume it might be considered equivalent to the MeSi  $\ddot{y}$  on G transposed to d. I thus suspect an error. Otherwise I am not able to interpret the case.

b) In instances 2,15,17 and 25 we find a MeSi which indicates only the end of the cadence placed between a cadence and an opening formula that begins one step higher than the end of the cadence. Thus in case 2 the MeSi ÿ is placed between a CB on G and opening formula starting on a. This is odd, as

<sup>2.</sup> The red variant transforms formula IIZ into 26B

the MeSi used in other comparable cases is  $\ddot{y}$  +conf. (cases 6-7) Examples:

In example (i) the opening formula 7A6 which comes after the MeSi  $\ddot{y}$  invariably starts on an a and is preceded by the MeSi  $\ddot{y}$  or  $\ddot{y}$ , if any. In example (ii) the MeSi  $\ddot{y}$  is followed by the opening formula 9A6 which regularly ought to start on G and to be preceded by the MeSi  $\ddot{y}$  (see melody 27,9). In the present case, however, the stressed syllable is preceded by one syllable only instead of two and for that reason formula 9A6 starts on a instead of G. But this G, although absent is understood, and I submit that this is why the MeSi  $\ddot{y}$  is preferred to  $\ddot{y}$  +conf.

From the above considerations and from the investigation of all the cases, i.e. 2,15,17,25 the following conclusion emerge:

There are cases of an opening formula starting one step higher than the end of the preceding cadence.

In such cases a step may be missing for reasons determined by the number of syllables and their accentuation but may yet be understood, in which case the position between the last note of the cadence and the first note of the initial formula will be occupied by the MeSi which would have been used if the step actually existed and the two notes were on the same pitch.

## MUSICAL PUNCTUATION

The musical punctuation of the melodies under investigation is resumed in the following table

Punctuation	after sections	after colons		cadences not justified	total
Comma(,)	1	1	9	1	12
Dot (.)	208	249	85	2	544
Total	209	250	94	3	556

Table I

The table shows that the comma occurs on very rare occasions only, usually at the end of units. In one single case it occurs at the end of a section (11,7) and in another at the end of a colon (11,11).

The dot is most frequently found at the end of sections and colons: yet in 85 cases we find it at the end of units. In three further cases (4,4.11,13.23,6) punctuation occurs at points where I cannot see any justification for making a stop.

The melodies under investigation were divided into 208 sections, 262 colons and 331 units (the figure 331 represents those units which are not found at the end of sections or colons).

The melodic subdivisions just mentioned are followed by musical punctuation as follows:

		musical	punctuation	no musical	punctuation
Sections	(208)	208	100.00%	_	_
Colons	(264)	248	93.93%	16	6.00%
Units	(331)	86	25.98%	245	74.01%

Table II

From the above table it may be gathered that:

a) a section is always followed by a musical punctuation.

- b) a colon is followed by musical punctuation in 248 cases (93.93% of all colons). Of the sixteen cases where punctuation is absent five may be explained by reference to the division and metrical form of the text (see:thematismos exo example 3, cases 84,20.92,11; and thematismos eso B1, cases 49,2.72,10. 110,5.pp.77f) but I feel unable to justify the remaining ones (28,6.29,14.33,6.49,15.54,1.54,24.81,3.90,5.92,11.106,6.111,8), unless they be due to errors of the manuscript or to wrong division of the melodies on my part.
- c) Units are followed by musical punctuation in 86 of 331 cases only, a percentage of 25.98%. The following table shows the degree in which the musical punctuation corresponds to the grammatical. The edition used for this purpose was "Μηναΐα τοῦ ὅλου ἑνιαυτοῦ", Τόμος Α΄(Σεπτέμβριος-'Οκτώβριος), Rome 1888.

M=musical punctuation	sections		colons		units		total			
G=grammatical punctuation	cases	8	cases	%	cases	8	cases	%		
M + G	202	97.11	162	61.36	39	11.78	403	50.18		
M , no G	6	2.88	86	32.57	47	14.19	139	17.31		
G, no M	_	i -	4	1.51	44	13.29	48	5.97		
no G, no M	-	-	12	4.54	201	60.72	213	26.52		
Total	208	•	264		331		803			

Table III

Interpretation of table III:

- A) Sections:
- a) Sections are followed by both musical and grammatical punctuation in 202 cases.
- b) As for the six cases in which musical punctuation is not combined with grammatical punctuation, see CA and C1A,pp.63-64.
- B) Colons:
- a) In 162 cases (61.36%) the colons are followed by both musical and grammatical punctuation.
- b) In 86 cases there is only musical punctuation. Investigation into those cases showed that this happens when a CB or a ClB is felt to be needed in the middle of a period which does not have any grammatical punctuation. The point at which the CB or ClB is inserted is chosen with great care to avoid breaking up the unity of the text.

- c) In four cases (49,15.54,1.54,24.81,3) there is only grammatical punctuation.
- d) In 12 cases (28,6.29,14.33.6.49,2.72,10.84,20.90,5.91.20. 106,6.110,5.111,8) we do not find any punctuation at all, whether musical or grammatical.

The cases covered by c) and d) were treated above in connection with table IIb.

## C) Units:

- a) In 201 cases (60.72%) there is no punctuation at all.
- b) In 44 cases (13.99%) there is only grammatical punctuation. Consequently the number of cases with no musical punctuation amounts to 245 (74.01%)
- c) In 47 cases (14,19%) we find musical punctuation only.
- d) In 39 cases (11,78%) musical and grammatical punctuation occur together. Thus musical punctuation occurs in 86 cases (25.97%) in all.

### General conclusion

- a) Sections and colons are always followed by musical punctuation. Exceptions amount to no more than 3.38% of all cases.
- b) The frequency of musical punctuation after units is only 25.97%.
- c) The 50.18% coincidence between grammatical and musical punctuation points indisputably to a close connection between musical punctuation and syntactic structure. Which again means that there is a close connection between musical punctuation and the structure of thought.
- d) The fact, however, that on several occasions musical punctuation occurs without grammatical punctuation and vice versa indicates the existence of further factors on which the musical punctuation depends, beyond those of the syntactic and semantic divisions in the text. Such further factors will be the metre of the text, the peculiarities of the formulas and the like.

For the moment I believe that any attempt to solve this problem would meet with failure. Only an investigation into the melodies of other manuscripts and the metre of the texts would seem to have a chance of leading to tenable results<sup>1</sup>.

<sup>1.</sup> See: Jorgen Raasted, some observations on the structure of the Stichera in Byzantine rite, Byzantion XXVIII (1958)pp.529-541.

THE AMBITUS OF THE MELOI	: /	AMBL	TUS	O F	THE	MEL	ODIE	S
--------------------------	-----	------	-----	-----	-----	-----	------	---

Modes	Ambitus	Melodies
Deuteros	D - f	55.
	D - е	17.54.56.90.97.102.103.
4	D - d	3.4.11.12.13.14.18.24.27.28.29.91.92.
	E - d	57.104.
 	D - c	81.
Pl.Deuteros	D - f	65.66.
	С - е	79∴.
12	D - d	36.37.38.49.84.
	C - d	22.35.78.106.
	С - с	21.24.51.64.69.83.
	D - c	9.23.24.48.50.67.95.
Nenano	D - d	16.68.72.88.110
	D - c	111.

Referring to the ambitus of the modes in general the monk Gabriel states that "οἱ κύριοι μέχρι τριῶν φωνῶν προΐασι τό ὑψηλότερον, τοῦς δέ πλαγίοις τοῦτο τό χαμηλότερον". Referring in what follows to the modes Plagal Deuteros and Barys he adds " ὁ πλάγιος τοῦ δευτέρου καί ὁ βαρύς κοινωνοῦσιν ἀλλήλοις κατά τό μή ποιεῖν διπλασμόν μέχρι γάρ ἑπτά φωνῶν οὖτοι προέρχονται".

The second passage shows that Gabriel does not include the tonic of the mode in his count of the steps. Consequently in the case of the Deuteros mode the highest point to which it ascends is the note  $\underline{e}$ . The same note of the low tetrachord viz. E, is the lowest note of the Plagal Deuteros. We must certainly interpret the word  $\chi \alpha \mu \eta \lambda \delta \tau \epsilon \rho \sigma \nu$  as meaning in this place not the lowest note to which the melody descends, but the basis of the Plagal mode.

As appears from the above table the Deuteros as well as the

<sup>1.</sup> Tardo. op. cit. p.199

<sup>2.</sup> Tardo. op. cit. pp. 199 -200

the Plagal Deuteros and Nenano modes ascends to the note e. Only in three cases do they reach f. In two of these cases (55,10.66,9) we find the formula  $4\Delta$  which in all probability belongs to the Plagal Protos mode and usually occurs in the low tetrachord (DFED)<sup>3</sup>. In the third case (65,10) we find the formula 51M which is very similar to  $4\Delta$ .

<sup>3.</sup> M.M.B. Tr. I, Sept. 47,2 and 62,1.

## APPENDIX A

### SCALES

The Deuteros, Pl. Deuteros and Nenano modes belong, according to the modern system of Byzantine music, to the chromatic genus, which uses smaller intervals of halftones and larger ones of three-half-tones.

The existence of the chromatic genus during the Middle Ages constitutes one of the greatest problems for research in Byzantine music, which up to the present has not been properly answered.

Since the melodies examined belong to the above modes, it was natural, during the progress of my research, to concern myself with this subject. Unfortunately, the variety and magnitude of problems involved in a formulaic analysis of the melodies gave me no opportunity to deal with this problem as I would have wished.

In spite of this, I tried as far as possible to gather from my material such information as in my opinion might assist in solving this problem. From a consideration of all the information gathered I confirmed that MSi and MeSi could be used as a sound basis from which useful conclusions could be derived. After this, I recorded all the MSi and MeSi in my material. I verified their place and function within the melodies, and, finally, I compared them with corresponding ones from later manuscripts and from the modern system of Byzantine music.

I have avoided mention or criticism of previous theories and ideas on this problem for two reasons:

 a) I have not attempted to present a complete study of this subject, since this would have necessitated recourse to a greater number of sources, and taken up time which, regrettably, I did not have at my disposal.

b) I have attempted to present only such conclusions as were in the course of my research, and, in particular, to indicate the method used, which, as I believe, enables one to confront the problem from a new point of view.

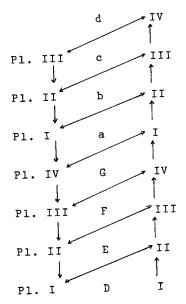
\* \* \*

The surviving theoretical works on Byzantine music agree in stating, as regards the modes, that ascending from the first mode we fond the Authentic modes while we find the Plagal ones by descending. Thus, for example, the Codex Barberinianus Gr. 300 provides the following explanation<sup>1</sup>:

Από τόν πρῶτον ἦχον ἄν κατέβεις μίαν φωνήν, εἴναι ὁ πλάγιος τοῦ τετάρτου, και ἀπό τόν πλάγιον τοῦ τετάρτου, ἄν ἀνέβεις
μίαν εἴναι πρῶτος και πάλιν ἀπό τόν πλάγιον τοῦ τετάρτου
ἄν κατέβεις μίαν, εἴναι βαρύς και ἀπό τόν βαρύν ἄν ἀνέβεις
μίαν, εἴναι τέταρτος και πάλιν ἀπό τόν βαρύν ἄν κατέβεις μίαν,
εἴναι πλάγιος τοῦ δευτέρου και ἀπό τόν πλάγιον τοῦ δευτέρου,
ἄν ἀνέβεις μίαν εἴναι τρίτος και ἀπό τόν τρίτον ἄν κατέβεις
μίαν εἴναι πάλιν πλάγιος τοῦ δευτέρου και ἀπό τόν πρώτου και ἀπό
τόν πλάγιον τοῦ πρώτου ἄν ἀνέβεις μίαν εἴναι δεύτερος και
ἀπό τόν δεύτερον, ἄν ἀνέβεις μίαν εἴναι τρίτος και ἀπό τόν
τρίτον ἄν ἀνέβεις μίαν εἴναι τέταρτος και ἀπό τόν τέταρτον
ἄν ἀνέβεις μίαν εἴναι πρῶτος.

<sup>1.</sup> Lorenzo Tardo, L'Antica melurgia bizantina, Grottaferata (1938) p.158. See also Γρ. Στάθη, Ἡ παλαιά βυζαντινή σημειογραφία καί τά προβλήματα τῆς μεταγραφῆς της εἰς τό πεντάγραμμον, Βυζαντινά, Τόμος 7ος, Θεσσαλονίκη 1975, p.203.

The above description yields the following diagram:



Referring to the problems of transcribing Byzantine melodies into Western notation <u>Jorgen Raasted</u> states that:"Transcriptions of Byzantine melodies into western notation are based on the assumption that medieval Byzantine chant consists of tones and half-tones only. The diatonic character of Byzantine music has been postulated by WELLESZ and TILLYARD from the early days of their studies, and their position -which lies behind such work as that done in <u>Monumenta Musicae Byzantinae</u> and that of the Grottaferrata school- has since then found support in observations made by a number of scholars."

Now, in my opinion the succession of modes on the degrees of the diatonic scale shows the position of the modes, but, not their scales  $^2$ . For instance, the Protos mode occurs between the Plagal Tetartos and Deuteros modes, but how the intervals of its scale were arranged or according to what system (tetrachord pentachord,octave...) it proceeds is not at all clear. In all probability this was indicated by means of the ἀπήχημα.

Consequently the possibility of the existence of a chromatic

<sup>1. &</sup>lt;u>Jørgen Raasted</u>, Intonation Formulas and Modal Signatures in Byzantine Musical Manuscripts, Copenhagen 1966. p.7
2. <u>Χρυσάνθου</u>, θεωρητικόν μέγα τῆς μουσικῆς, Trieste, 1832 p.130.

and an enharmonic genus before the reformation of 1818 must be investigated with due attention.

In an "Anthology" which must have been written at the beginning of the 18th c. there is a doxology by Petros Lampadarios in the Plagal Deuteros mode. The same doxology is found in more recent books of Byzantine music, transcribed according to the new system and in the chromatic Plagal Deuteros mode. This demonstrates that the chromatic Plagal Deuteros mode was in use already at the time of Petros Lampadarios (18th c.) and that the distinction into three genera was not an invention due to the three teachers of the new method.

But the fact that Petros Lampadarios writes melodies in a chromatic genus must, I submit, mean that the genus in question was already recognized at the time and that its roots must be sought in a more ancient period. As a matter of fact, the Προπαιδεΐαι τῶν παπαδικῶν and other theoretical writings on Byzantine music contain references to the existence of " 'phthorika mele" already from the 12th c. and onwards, and they add tables of the "phthoric" signs. 3

With this background in view I have tried to ascertain whether the melodies under consideration contain elements which prove, or at least indicate, that the modes in question were chromatic at the time. The results of my investigations are presented below.

The use of MeSi in the investigated melodies of the modes Deuteros, Plagal Deuteros and Nenano appears from the following table:

D	E	F	G	а	b	С	d
मेवु	ते पु		ÿ Aÿ<	y-	ÿ< âÿ	さい	437. 871
				3			-

<sup>1)</sup> Ανθολογία της μουσικης περιέχουσα κατά τάξιν συλλογήν τινα μαθημάτων των άναγκαιοτέρων της έκκλησιαστικης άκολουθίας (in the possession of J. Raasted), f. 108v-113r

<sup>2)</sup> Πανδέκτη, 'Εν Κωνσταντινουπόλει (αωνά):Τόμος 2 pp.687-695.

<sup>3)</sup> Γρ. Στάθη op. cit. pp 199-201

The table shows that:

- a) The named modes use a common system of MeSi having as basic points of support i) the element y (developed from the minuscule  $\beta$  and ii) the element y or y or y.
- b) The y , either alone or accompanied by the  $\pi$  (= $\pi\lambda\Delta\gamma$   $\log$ ), occurs on the notes E,G,b.
- c) The element \_\_\_\_ or \_\_\_ is always found on an a, where later manuscripts have of the phthora of the Nenano).
- d) The remaining MeSi, viz.  $\frac{2}{\pi}$   $\frac{2}{3}$  (12 cases),  $\frac{2}{3}$  (4 cases), and  $\frac{2}{3}$  (1 case) belong to uther modes and probably introduce some kind of modulation into these modes.

In view of the above observations I shall advance two hypotheses:

- a) The scale of the modes Deuteros, Plagal Deuteros and Nenano is diatonic.
- b) The element y whether used by itself or in combination with the abbreviation  $\hat{\pi}(=\pi\lambda d\gamma \log)$  has the same implication.

If these hypotheses are accepted the scale can be tabulated as follows, with the MeSi placed at the corresponding positions:

E F	•	G	a	ь	С	đ	e
half- tone	tone	tone	tone	half- tone	tone	tone	
<u> </u>	COILE	23	?>	;;«	1 tone		
£ÿ		y	y 	<i>y``</i> ने गुं		ሕ <sub></sub> ້ຽ <sup>ແ</sup>	
		ते युः	W.T.	чy			
			9"-"				

It appears from the above figure that the element y is found on E and b, that is on degrees of the scale above which there is a half-tone.

The same element, y , is furthermore encountered on G, but

the interval G-a is a tone. Given that this element, according to hypothesis (b) carries the same implication wherever it occurs, the interval G-a must be a half-tone. The conclusion is supported by the fact that on  $\underline{a}$  we find the MeSi which in later manuscripts takes the form  $\rho$ , and today the interval under it requires a half-tone.

This being so we must, in order to create the half-tone, accept either G-sharp or a-flat.

## First possibility: G-sharp

Accepting G-sharp we must correspondingly have d-sharp in the high tetrachord. The scale will then be:

### Scale A:

Е	F	(	3 <b>#</b>	a	Ъ	c c	<u>i♯ e</u>
half-	three	half-tones	half-	tone	half-	three half-tones	half-
tone			tone		tone		tone

This scale consists of two similar tetrachords E-a and b-e separated by the tone a-b.

A comparison of this scale with that of the P1. Deuteros of the modern system of Byzantine music yields the following results:

π	β	I		Δ		×	:	Z	,	)	π
half-	three h	alf-tones	<del></del>	Ť	tone	Ť	half-	three	half-tones	hali	F-
tone	_	10	tone		12		tone 6	:	20	tone	
E	<u> </u>		#	a		ъ		c		<u>.</u> d#	e

- a) The arrangements of the intervals of the two scales coincide completely, and so do the arrangements of the tetrachords.
- b) The element y, which in the modern system received the form  $\ \ \ \ \$ , occurs in exactly the same position, i.e.  $\pi\alpha(=E)$ .  $\Gamma\alpha(=G^{\sharp})$ ,  $\pi\epsilon(=b)$ .

<sup>1.</sup> The comparison is based on the half-tones, tones and three half-tones, not on the μόρια or πόμματα\* of the modern system as this would be impossible.

<sup>\*.</sup> See Δ.Γ. Παναγιωτοπούλου, θεωρία καί πρᾶξις τῆς Βυζαντινῆς ἐκκλ. μουσικῆς, Athens 1947,p.50.

<sup>2.</sup> This scale starts from  $\Pi\alpha(=D)$ . To facilitate the comparison it is transposed upwards by one tone, thus  $\Pi\alpha(=E)$ , Bou(=F),  $\Gamma\alpha(=G)$ ,  $\Delta\iota(=a)$ ,  $\varkappa\epsilon(=b)$ ,  $Z\omega(=c)$ ,  $N\eta(=d)$ ,  $\Pi\alpha(=e)$ .

c) The element  $= -\pi (=9)$  is likewise found in the expected position, i.e. on a. 1

### Second possibility: a-flat

Accepting a-flat we must correspondingly have D-flat in the low tetrachord. The scale will then be:

### Scale B:

С	Db	E		F	G	ab	Ъ	С
half- tone	three	half-tones	half- tone	tone	hali		half-tones	1.
Lone			LONE		tone	<u> </u>		tone

As the figure demonstrates, the result is a chromatic scale similar to scale  $\underline{A}$  but placed one third lower. This means that a chromatic scale is constructed which consists of two tetrachords, C-F and G-c, separated by the tone F-G.

### Conclusions

- a) It appears from what has been said that the scale of the modes Deuteros, Pl. Deuteros and Nenano is chromatic.
- b) Whether a melody of the modes in question is transcribed in accordance with  $\underline{\text{scale A}}$  or with  $\underline{\text{scale B}}$  (lowered by one third) the result is the same.

The above conclusions presuppose the original hypothesis: that the element y whether used alone or in combination with the  $\frac{\lambda}{\pi}$  (= $\pi\lambda$ d $\gamma$ los) has the same implication wherever it occurs.

For this reason I directed my investigations towards manuscripts later than Sinai 1230 to see if they could provide more precise information.

For this purpose I used the manuscript Sinai 1301 (16th-17th c. according to Benesevic, Catalogus III,1. Petrograd 1917). This manuscript contains, among other things, the stichera of the month of September with melodies that appear to be virtually the same as those of the manuscript Sinai 1230. I have written down the MSi and MeSi of the melodies 11,12,13,14,16,21,22 and 23 of ms Sinai 1230 and next,

<sup>1.</sup> In the modern scale of the Pl. Deuteros mode the  $\rho$  occurs on Bou(=F),Zw(=c)and  $\Pi\alpha$ (=e). In the melodies investigated there are no MeSi on these three pitches, and it is therefore not possible to compare them with their modern parallels.

inai	Sinai 1230. Έχ ρύζης ἀγαθῆς Sinai 1301. " "	Ğ.	program	رة بع	raens เ		(11)	<u>н</u> п	ш ш	2: 03:	ਹ ਹ	32 ; S	1	о о ы	हा कि ए ए	<u>ო</u> თ	ائ. تد: ال	0 0 %	6 G B	상= ,? '꼬 ^	<b>9</b> 9	:25 :2	ပ ပ					
inai inai	Sinai 1230. Tổ μνημόσυνόν σου (12) Sinai 1301. """"	\$ <del>=</del>	ילועטת		200	000 #	12)	<i>دیم پڑ</i> ی ص ط	ын	راد :ر ري :ر	FA FP	ري دي	ш	υρ	£20 :{\$	D G	ડ્રે <sup>⊭</sup> .ડે	ын	<sub>O</sub>	*\$	<u>д</u> ග	žs	Ф.					
inai	Sinai 1230. Ή τῶν λευφάνων Sinai 1301. " " "	H =	ווייי אַנ	ειφφ. =	kvwv		(13)	; y ; g	ပ ပ	€20 ±20	о о н н	يتي بي	щщ	स्त स्त	S: 00 !	0 0 7 7	; 27 ; S	0 0									1	ļ
inai	Sinai 1230. Ήγάπησας θεοφόρε Sinai 1301. ""	, Hyó	ίπησα	\$ 51 \$ 51	မီဝေ့စ်ဝဒ		(14)	رخ ت ت	<u> </u>	\$\$	<u>ы ы</u>	:: ;; a	n n	9 9	122 KS	о О О	1	107		الله المارية الله	<b>в</b> в	اگئی تحت	υ υ •	O	;2.			
inai	Sinai 1230. θεία Sinai 1301. "	. 9et		Xaprs			(16)	Tycra noon	<u>0</u>	۶ <del>۵</del>	д 9	:3	q	დ დ	;37 ×S	Э Э Э	ΥΗ ΣΞ, ¿ζ	шш	ပ	;zı	- O	j						
Sinai	Sinai 1230. Ίερεύς ἐννομώτατος(21) Sinai 1301. """	IEG.	peds "	€.V.V.	ομώτα"	rtos(	(21)	۲۵ ۲۵ ۱۶ ۱۶	<u>ი</u> ი	الا تحاد	о о н н	13.5	0 0 0		الع تحة	თ თ	p3		<u>ъ</u>	لا الله الله الله الله الله الله الله ا	<u>о</u>	ະລາ	ָ ט	ပ ပ	53 ES	<u> </u>	יבז	O
Sinai	Sinai 1230. Βήματι τυράννου Sinai 1301. " "	B.	µמ⊤נ #	5 J	ส์ขอบ		(22)	1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	E E	ते पु <b>र</b> G	<u>ຫ</u>	<del>د</del> ي د	ď	дд	44 s	д Д.	ධ ;න	Ö										
Sinai	Sinai 1230. Βάσιμον κρηπζόα Sinai 1301. " "	. Bắc	מרחסי	χ d d	ηπζδα		(23)	**************************************	ы В	9a	eg Eg Eg	\$ res	υщ	E	٠. يا بر ب. يا بر	9	ο ο :Σ :2	;2 ;2 O T									ļ	

below them the corresponding ones of Sinai 1301. I have left an empty space at the points at which one of the manuscripts does not have any MSi or MeSi. In front of each MeSi I have written the cadential note of the preceding cadence and after each MeSi I have written the initial note of the following opening formula.

### Observations

The table shows that:

- a) between E-E, G-G, b-b, MeSi occur as follows:
- 1) Sinai 1230 E ਜੈ ÿ E. G ÿ G. b កិ ÿ b
- 22) Sinai 1301 E 🕉 E. G 📆 G. b 📆 b<sup>1</sup>
- b) In Sinai  $1230 \, \hat{\pi} \, \hat{y}$  occurs on E and on b, whereas  $\hat{y}$  is only found on G.
- c) In Sinai 1301  $\backsim$  (= $\ddot{y}$ ) occurs on E, on G, and on b. Furthermore, between G-G or b-b we find  $\ddot{\sim}$  in some cases, but  $\ddot{\sim}$  in others.<sup>2</sup>

In my opinion these facts show that the element y has the same implication wherever it is found, i.e. it means that the interval above the degree on which it is found must be a half-tone. This view is further corroborated by the use of the element in question in the modern system of Byzantine music:

<sup>1.</sup> The MeSi  $\overset{\smile}{\smile}$  and  $\overset{\smile}{\smile}$  must be interpreted as expressing a melody as follows:

G  $\overset{\smile}{\smile}$  G =G-F-E-F-G.

b o b =d-c-b. b o b =b-a-G-a-b.

Similar instances occur a) in ms Sinai 1237(17th c. according to Benesevic, Catalogus III,1. Petrograd 1917), in which the and are sometimes found between E-E and at other times between G-G. For example:

f. 2r. Έχ ρύζης ἀγαθῆς...ἐνδιαύτημα G 🍮 G.

f. 2r. Τό μνημόσυνόν σου...πάτερ Συμεών ΕΘΕ..καλός G Ο G f.11r. Ίερεύς έννομώτατος... Άνθιμε Ε Ο Ε..μυστήρια G Ο G

f.14r. Βήματι τυράννου...έχραύγαζες...Ε 🗢 Ε.

b) In ms Athens 891 (A.D1787), in which MeSi is found between E-E,G-G and b-b;MeSi is, if are not used. The phthora of is found both on a and D.

c) In ms Athens 903 (A.D1782), in which MeSi 😕 , 🚊 , Sare found on E, or G, or b. MeSi 💆 is found only on G or b.

#### Scale of Deuteros mode.

S.	π. O	ا		*	<u>A</u>	и <u>.</u>	Z	5)	j
half-	three	half-tones	half-		half-	three	half-tones	half-	1
tone	]	· · · · · · · · · · · · · · · · · · ·	tone	tone	tone			tone	

Scale of Plagal Deuteros mode.

π	B		ר ,	Δ	n	Z* Ø	V	, π΄
half tone	three	half-tones	half- tone	tone	half- tone	three	half-tones	half- tone

It is evident from the above scales that the element  $\ddot{\varphi}$  (= $\ddot{y}$ ) invariably occurs on degrees above which there is a half-tone.

After all the above observations the conclusion must be drawn that the melodies of the modes Deuteros, Plagal Deuteros and Nenano under investigation are chromatic.

An example is presented below of a transcription of melody No.13 of the Deuteros mode according to the A chromatic scale (see above p. 101), i.e.  $C^{*}$ -D -E -F - $G^{*}$ -a -b -c - $G^{*}$ -e 1

According to the modern system of Byzantine music this scale when it descends two steps below the tonic (E) it descends diatonically i.e. C# -D-E corresponding to G# -a-b in the upper tetrachord.

#### Observations:

A) In line 4, there is the three-tone interval D-G#, which, according to western European music theory, is forbidden. In the case of the transcription of all the melodies under investigation in the A chromatic scale, this interval is met with 232 times. Of the other three-tone intervals, i.e. a-d# and F-b, the first is met with 32 times, and the second not at all.

The above evidence seems at first to contradict the previous conclusion that the melodies are chromatic. But careful research into the melodies of the chromatic modes of modern Byzantine music proves that these three-tone intervals are very common.

Examples: a) Interval  $N_{\eta} - \Gamma_{\alpha} \neq (=D - G^{\sharp})^{1}$ 

<sup>1. 3,4.3,6.3,9.3,12.4,7.11,8.11,12.12,7.13,4.14,3.14,7....</sup>in all 232 cases.

<sup>2.</sup> Λησταζς λογισμοζς...,Στιχηρόν ἰδιόμελον τῆς Δ΄Κυριακῆς τῶν Νηστειῶν, ἦχος శా ఈ శాα , Μουσικός Πανδέκτης (Ζωή), Τόμος Ζ΄(Τριφδιον), Athens 1937, p.100.

3) ....oute 
$$\hat{\epsilon}$$
  $\hat{\epsilon}$   $\hat{$ 

#### b) Interval βου -κε (=F-b)

This interval was not found in the melodies under investigation. However it is found in a great number of cases in chromatic melodies of the modern Byzantine music system.

#### Examples:

<sup>1.</sup> ibid. p.100

<sup>2.</sup> ibid. p.101

<sup>3.</sup> Γέννημα έχιδνῶν..., Δοξαστικόν εἰς τόν ἐσπερινόν τῆς Μ. Πέμπτης, ήχος το το το το το τος Μ. Μετά τήν εἰς Αδου κάθοδον... Έωθινόν Ι΄, ήχος το το το τος ,

<sup>\*\*</sup> Μετα την εις Ασου κασσουν... Εωσίνον Ι , ηχος πο της Αναστασιματάριον (Ζωή), Athens 1961, p.283

5. Βουλευτήριον Σωτήρ..., Κάθισμα, ήχος δ΄ Α΄ , Μουσικός Πανδέκτης (Ζωή), Τόμος Ζ΄ (τριώδιον), Athens 1937, p.160.

6. Κατευθυνθήτω ή προσευχή μου... ήχος κ΄ Α΄ , Μουσικός Πανδέκτης (Ζωή), Τόμος Α, Athens 1956, p.30. This example (6) belongs to a melody of the Deuteros mode and is chanted based on Al recording to scale P (2000 classes = 102) based on  $\Delta \iota$  according to scale B (see above p.102).

## c) Interval $\Delta \iota - v \eta^{\sharp} (= a - d^{\sharp})^{1}$

This interval, however, was found in 32 cases, in the melodies under research although in the modern system, as far as I know, it is not found at all. Instead of this, in the melodies of Pl. Deuteros mode, it is found in a great number of cases as the interval Au-vn (=a-d). This originates from the previous interval i.e. Δι-νη<sup>#</sup>, with the placing of a diatonic phthora on  $\Delta\iota(\diamond)$  or on  $v\eta(2)$ . In this case the chromatic tetrachord κε-πα (=b-e) is changed into a diatonic one.

#### Examples:

1) 
$$X$$
  $X$   $\hat{\sigma}$   $\hat{\tau}$   $\hat{\tau$ 

The above examples show that the interval  $\Delta \iota - \nu \eta (=a-d)$  would reasonably justify the belief that it was a Δι-νη# (=a-d#) if there were no phthorai which define the kind of the tetrachord. The lack of phthorai in the melodies under investigation creates much difficulty in defining clearly the type of the aforementioned interval, as well as of many other intervals.

For example, the Doxology of Petros Lampadarios in the Pl. Deuteros mode, which is found in both the old and the modern method, can show us the difficulty of defining the type of intervals.

 <sup>3,2.3,12.4,2.14,7.16,4.17,10...</sup>in all 32 cases.
 Μετά τήν εἰς Ἄδου κάθοδον..., Ἐωθινόν Ι΄, ἀναστασιματά-

ριον (Ζωή), Athens 1961.p.282.
3) Ἡ ὅντως εἰρήνη σύ Χριστέ..., Ἐωθινόν ΣΤ΄, ibid.p.281.
4) Νῦν αἰ δυνάμεις τῶν οὐρανῶν..., χερουβικόν τῶν προηγιασμένων, Πέτρου Λαμπαδαρίου, ήχος πῶς ἡα, Μουσικός Πανδέκτης (Zωή), Τόμος A. Athens 1958, p.64.

Thxos  $\frac{1}{4}$   $\frac{1}{2}$   $\frac{1}{4}$   $\frac{1}{4}$ 

As one can see from the modern melody above, the diatonic phthora of  $\Delta\iota(Q)$  is placed over the syllable  $(\mathring{\epsilon}\nu \mathring{\upsilon}) \mathring{\psi}^{Q}_{\iota}(\sigma\tau \iota\iota\varsigma)$  and because of the phthora, the chromatic tetrachord  $\kappa\epsilon - \pi\alpha$  (=b-e) becomes diatonic until the syllable  $(\mathring{\vartheta}\epsilon) \overset{\varphi}{\varphi}$  where, because of the chromatic phthora of  $\Delta\iota$   $(\mathring{\varphi})$  the melody returns to the chromatic genus.

As it appears from the old melody below the modern one, the phthora & does not exist; there is only the phthora & at the end of the musical line. Whether this phthora & indicates that the previous line should be chanted diatonically, or not, can not be ascertained. But if it should be chanted diatonically it still is not clear from what point the diatonic modulation must begin. I think that the solution to this problem can be obtained by collecting melodies of the cld system transcribed into the modern one and then comparing them. Only in this way will it be possible to find those places in the melodies where such modulation occurs.

From the above, we can conclude that the existence of three tone intervals, i.e.  $D-G^{\sharp}$ , F-b,  $a-d^{\sharp}$  does not rule out the conclusion that the melodies are chromatic.

B) In the line 7, we find the MeSi & , followed by an opening formula starting from d. The problem here is to determine whether the note d is natural of d\*. In the modern system there are cases where either exists.

<sup>1.</sup> Πανδέπτη, έν Κωνσταντινουπόλει (αωνα΄),Τόμ.2,ρ.687.

<sup>2. &#</sup>x27;Ανθολογία της μουσικης περιέχουσα κατά τάξιν συλλογήν τινα μαθημάτων των άναγκαιοτέρων της έκκλησιαστικης άκολουθίας (in the possession of J.Raasted), f.108v.

#### Examples:

From the above examples, it appears that after a chromatic cadence on  $\pi\alpha$  (=E) and a chromatic MeSi  $\pi$  an opening formula can follow starting with  $vn^{\sharp}(=d^{\sharp})$  or with vn(=d). In the second case over the vn(=d) a diatonic phthora (2) is placed. In line 7 of melody No. 13, the diatonic phthora does not exist (because as we previously said, in the melodies under research phthorai in general are not found) but the diatonic MeSi &

do exist. Because of this, I have transcribed the opening note as well as all the other  $d^{S}$  of lines 7 and 8 as d natural instead of  $d^{\sharp}$ .

In relation to the solution of this problem the same is true for the modulations as was previously asserted at the end of observation A.

<sup>&#</sup>x27;Η ἀπεγνωσμένη διά τόν βίον..., 'Ιδιόμελον Μ. Τετάρτης, ήχος πός πα, Μουσικός Πανδέκτης (Ζωή), Τόμος Ζ, Athens 1937

Ηβεβυθισμένη τη άμαρτία..., Ίδιόμελον Μ. Τετάρτης, ήχος 

<sup>3.</sup> Εξέδυσαν τά ἰμάτιά μου..., Δοξαστικόν Μ. Παρασκευής, ήχος

πος πα, ibid. p. 227. 4. Δοξολογία, ήχος πος πας, 'Αναστασιματάριον (Ζωή), Athens 1961,p.285.

<sup>5.</sup> Χε ρουβικόν Γρηγορίου Πρωτοψάλτου, ήχος న τα , Μουσικός πανδέκτης (Ζωή), Τόμος Δ, Athens 1968, p.64.

For the transcription of all the melodies into the chromatic genus, other problems certainly exist which cannot however be solved at present. The solution to these problems presupposes the transcription of much more material from the old into the new Byzantine notation and detailed comparison of the results. The lack of necessary sources especially from the modern system of Byzantine music, but also the limited time available to me does not permit me to continue research on this subject. I hope, however, that not only I especially should return to this subject but also that other researchers should deal with finding a definite solution to this problem.

### A P P E N D I X B

## Analysis of melody No. 90 of the Deuteros mode.

{	31 7Γ 10ΖΒ  1 Υ Δευ τε φιλ α θλοι b a bc G FE  2Αα	Clc	E
Į	2 των θη λι ων το καυ χη μα D G G a ca b ag G	СВ	G,
{	9Γα 8Γς 3 η την πρω το μαρ τυ ρα θε κλαν G G a b a ba Gab a 3A 1A6	ClC	Ga
l	4 ενυμνους τι μη σω μεν a b ab G a G FE b	.CA	Ep.
{	34Aq 11FL 15A8 55B 30A	ClB	ъa
{	9Aα 7Aβ 16Ια 1Εβ  τη δυ να μει του σταυ ρου κατ ε τα τη σε G a bc b a bc GEFG G bG a GFE E	.CA	Ε,
	της και την νι κην α ρα σα Ε Ε Ε GF Ga FE D 17Αε 7Γ 16Μδ 10Αα	сс	D ,
	α ξι ως ε στε φα νω θη EF Ga a bc G F E F	.ClA	EF.

<sup>\*</sup> This melody was selected by lot from among all the 56 melodies.

8 δι σ D G a	dcb AB 2Aa	.CB	ь
9 <b>6</b> 00 b	ω πει η πο λυ α θλος b cb a ca b aG G	.св	G,
10 <sup>3</sup> του G	一つ 3/3 301 に	ClC	Gª
11	και της μελ λου σης κρι σε ως bc G F E G a FE Da	.C1B	Dа
12 του a	9Γγ S εν πι στει και πο θώ bc ba G a b a 3A 1Bα	cc	a
13	C - 3" 30 23 3 C	:-CA	Е.

#### A) Text

The contents of the text indicate a division into three periods:

First period (lines 1-4) Christians with an interest in contests are invited to honour the protomartyr Thekla.

Second period (lines 5-7) Thekla deserves honour for two reasons:

a) She conquered the enemy, b) her victory was recognized and rewarded.

Third period (lines 8-13) As a winner and holder of a prize from God she is in a position to intercede with him to save from danger and destruction the faithful who celebrate her memory.

Each period ends with a high point or a full stop.

#### B) Melody

The melodic division of the sticheron coincides with that of the text. That is to say, there are three musical sections of which only the second is subdivided into smaller sections, i.e. 1-4, (5-6,7),8-13.

Details:

First Period (1-4) Constituted of four units joined in pairs

so as to form two colons, i.e(1-2)+(3-4). Together the two colons form one section (1-4).

The first colon (1-2) consists of two units, the first ending in C1C on E, the second in CB on G.

The second colon (3-4) consists likewise of two units, the first ending in C1C on  $\boldsymbol{G}^a$ , the second in CA on  $\boldsymbol{E}^b$ .

The splitting of the section into two colons(1-2,3-4) may at first sight seem ill-conceived as it spoils the unity of the text. However, on closer inspection it appears that the melodist had his reasons for doing so, viz. a) because a CB cadence on G was a necessity at the end of the second melodic line, and b) because a temporary lingering on the phrase "the pride of womankind" (τῶν ϑηλειῶν τό καύχημα) arouses the curiosity of the audience about the person who is "the pride of womankind"

Both colons are preceded by a MeSi and followed by a musical dot.

Second Period (5-7) Constituted of four units joined in pairs so as to form two sections (5-6,7).

The first section consists of two colons (5 and 6), the first ending in C1B an  $B^a$ , the second in CA on E. In spite of the absence of the expected musical dot at the end of the first colon the section was divided into two colons because the following melodic line (6) begins with the formula  $9A\alpha$  which is normally found to open colons. Furthermore the melodic line  $9A\alpha-7AB-16I\alpha-1EB$  is often found to constitute a colon by itself (see 3.5.4.4/5.33.13/14. etc.).

The second section consists of two units, the first ending in CC on D, the second in C1A on  $\ensuremath{E^F}$ .

The second period was divided into two sections and not into two colons for two reasons a) at the end of the first section (5-6) there is a CA cadence on E such as usually occurs at the end of sections, and b) the period in question comprises two events happening at different places and times. First that is, the victory over the enemy, located on Earth and taking place during Thekla's earthly life, and second her receiving which takes place in Heaven as she appears before God.

Third Period (8-13) Constituted of six units which form four colons (8,9,10-11,12-13) and, in combination, one section

(8-13).

The two first colons (8 and 9) could be regarded as one. The division was made because of the occurrence at the end of the first colon of the thematismos exo which has in all cases been regarded as forming a colon by itself. The third colon (10-11) consists of two units, the first ending in C1C on  $G^a$  the second in C1B on  $D^a$ . The last colon consists likewise of two units, the first ending in CC on a, the second in CA on E.

#### General Observations

#### A) Signatures

- a) The melody begins with y +b because the first syllable of the text carries both a grammatical and a metrical accent. (See MSi of the Deuteros mode pp. 80f).
- b) At the beginning of the section and colons a MeSi occurs except for such cases in which a leading-on cadence precedes (6,8,12). Further, there is no MeSi at the beginning of colon 9 which is preceded by the thematismos exo; this is due to the metrical shape of the text (see thematismos exo, case 2, p. 78).

#### B) Musical punctuation

Save for a single instance (line 5) all sections and colons are followed by a musical dot.

รีที่นะคอง - เอื้องเชื้ง - เทีร - รัพทีร - ...

Sinai 1230.17v. 68,9/10	xατ αγ γελ: λει αν υ ψω σιν· a a b ab G aG FE F	Strate D. Gadeb
Saba 610.14r.		ex / / se 11th cent.
Saba 361.13r	/ nº (; ; ;	5x / 12th?
Athens 883.18v.	2	12th cent.
Athos, Vatoped: 1492,11v.	,10	A.D.1242
Ierusalem, Photiou 30.12v.	į, į,	* 13th cent.?
Sinai 1484.8r.	الا:	*: / 30 13th cent.
Sinai 1487.6v.	*/	:: / 30 14th cent.
Paris 265.10v.	پُ	ポナンショ動 14th cent.
Sinai 1237.43v.	ور ا	17th cent.
Athens 896.19v.	المان	%17th cent.
Athens 910.36v.	21	In 17th cent.
Athens 903.27v.	الما الما الما الما الما الما الما الما	A.D.1782
Athens 891.13v.	الما الما الما الما الما الما الما الما	

11th/12th? 11th cent.

12th cent.

A.D.1242 13th cent. 14th cent. 17th cent. 17th cent.

A.D.1782 A.D.1787

----- 13th cent. ----- 14th cent. ----- 17th cent. ٤S ۶<u>۰</u> دځ ; j: J٤ j: ١ م <u>د</u> ا 1 j۶ 1 2 ច S 4 Jŧ ドド 20 Νέον φυτόν καθάπερ έλαίας..... ري: مي ري: من (V. ...) اراً الم ار ا δι FE Ierusalem, Photiou 30.4r. 18.6/7 Athos, Vatopedi 1492.4r. Sinai 1487.-----Sinai 1484.-----Athens 910.-----Sinai 1230.5v. Athens 883. 5r. Sinai 1237.10v. Athens 896.5v. Athens 903.6v. Athens 891.3v. Paris 265.3v. Saba 610.3r. Saba 361.4r.

Νέον φυτόν παθάπερ	έλα ίας														
Sinai 1230.3r. 18,9	<del>دی</del> ۳۵	Ev Tpu G a	₩ P	¥ Fr Se a	್) ಕೈ ಇ	GF GF	. ខេដ	၂ ၌ ဝ	ه د را ه د را	a a B	<b>7</b> 30 E E E E E E E E E E E E E E E E E E	ј' J su	K	A.D.1365	
Saba 610.3r		ė	1		7	مار	0	J	"	(;		•		11th cent.	
Saba 361.4r		:)	1/	j	ı,	70		j	/	(2				11th/12th?	
Athens 883.5r	ڊ/	j	iļ		1)	,°	ڔ					37	133	12th cent.	ŀ
Athos, Vatopedi 1492.4r.	دع					70	ţ					i,z J	ارا <sup>ط</sup> حرغ	A.D.1242	
Ierusalem, Photiou 30.4r	برد												j;	13th cent.	
Sinai 1484														13th cent.	1
Sinai 1487							Ì			! !				14th cent.	
Paris 265.3v.	٤Σ					'. "	ڋ					٠,		14th cent.	
Sinai 1237.10v.	÷\$	را	1		,	7,6	Č		إ	ſ	,	Ji	K=S	17th cent	ſ
Athens 896.5v	ş\$	L	in		17	رِيَّ ئ'	ţ		1			^~)	ر. ا	17th cent.	
Athens 910,					; ;	1								17th cent.	1
Athens 903.6v.	ţz	ا ر <mark>-</mark>	J.		3	ع کی ہے	ŗL Ç	ſ	)	ſ,	J.		۲°5 .	A.D.1782	
Athens 891.3v	٤\$	,	14		4	, "J	ic C		ļ	6	J	۲:۶ ۱:	4.5	A.D.1787	

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#### UNIVERSITÉ DE COPENHAGUE

# CAHIERS DE L'INSTITUT DU MOYEN-ÂGE GREC ET LATIN publiés par le directeur de l'Institut

- 23 -

#### GEORGE AMARGIANAKIS

#### AN ANALYSIS OF STICHERA IN THE DEUTEROS MODES

The Stichera Idiomela for the Month of September in the Modes Deuteros, Plagal Deuteros, and Nenano Transcribed from the Manuscript Sinai 1230 (A.D.1365)

PART II

Copenhague 1977

A part of the printing costs of this issue of 'Cahiers' has been defrayed by the Greek State Scholarship Foundation

# MELODIES OF THE STICHERA IDIOMELA FOR SEPTEMBER

56 melodies for the month of September are presented below. Of these 25 belong to the Deuteros mode, 25 to the Plagal Deuteros mode and 6 to the Nenano mode.

They have not been numbered consecutively (1,2,3,4 etc.). The numbers employed are those of the edition by <u>Fgon Wellesz</u>, "Die Hymnen des Sticherarium fur September, Vol. I, Copenhague 1936" which also contains other stichera, belonging to the same month but to other modes.

The melodies have been divided into musical lines which are mumbered consecutively. Thus, for instance, 49,6 will mean "melody No. 46, line 6".

Beneath the text I have given letter-transcription of the melodies. This is a simple and practical way of indicating the movements of the melody without becoming involved in the intricacies of a complete reading of the Byzantine musical notation; a method which has also been used, for example, by <u>Jørgen Raasted</u>, in his "Intonation Formulas and Modal Signatures in Byzantine musical Manuscripts". This method of representation presupposes, of course, that the melodies of the modes in question are diatonic. If they are proved to be chromatic it would have to be changed.

Square brackets indicate parts of the melodies not clearly discernible in the manuscript due either to bad photographing or to damage suffered by the manuscript itself.

<sup>\*</sup> For more details see p.p. 96-111.

M.M.B. Tr. I, Sept. No. 3 Sinai 1230, 2v.

Kυπ	ριανοῦ μ	μογαχού
	, 	12Aa11Bδ
1	ÿ	٠ - ١ - ١ - ١ - ١ - ١ - ١ - ١ - ١ - ١ -
		Day ha gios er o ge os.
		$ \begin{array}{cccccccccccccccccccccccccccccccccccc$
0		30 DEB
2		10 10 10 50 TO 50 10 50 11 50 11
		μαιθαυμα ετα τα ερ γα εσυ· αbcdd αb αG
5	ÿ	9Ea 7Aa 160a 1EB 4Ea
	_	λαιαιο ορι 6ορ στης ζι χλι στεμοί.
		Gbabc GFEFG bG aG FEEFGFG
		10Aa 20B 33A
4		10,30 + 12 > 3 /2 =
		πε λεις jap so gia του θε ου· Ef DG cabaGaFG
		TO G CO B O G OF G
5	ij	PAG TAB 1610 TEE 10AG
•	J	μαι υ πο ετα εις τε λει α και δυ γα μις.
		GabcbabcGEFGGbGaGFE F
÷		11Aa15BB
6	15	11Aa 15BB 8BB
		ουν α ναρχος τε και ουν ερ γει α· DGG ab b bc a baGG
		DGG ab b bc a ba GG
7	ij	9Aa 8rg 7Ba
7	J	παντο δυ να μω ε ξου ει α
		G G a bc b a ba Gab abc
8		160a 1En 10Ba
		νο εμω επ ε δη μη εας. GF EF G bG a G FE EFD
		GF EF G bG aG FE EFD
_	22	11Ba15B88By
9. 🖟	9	Jo των ο ε καλ λυ νας τόλα εμα. G abb b bc a ba G G
		G ob b b c o bo G G
		91: 81:
10	ÿ	av ex spa erws ef a new par door Gabaaaba Gaba
-•	<b>J</b>	αν εκ φρα ετως εξα πει ραν όρου
		Gabaãa ba Goba
		un to a neis rn DE O rn ti.
11		ور د و د د د د د د د د د د د د د د د د د
		עוז דף בו דו של ס של מקדות או בו בו בו בו בי
		a a b ab G a G FE E F E
12		12[8 140 13Ay
12		of a he he has a dar mar mor har.
		διαθεμε νος ο ρους και κρο νους. DGb Gaadc dcbb
		contin

### M.M.B. Tr. 1, Sept. No. 3 continued

		34Aα 11Βζ 15Aβ 2Aα
13		المراوفي أو المعتب الموسي المراورة
		εις σωτη ρι αν η μων αν αλ λοι ω τε.
		a Gabb G b cba ca b a G G
	_	9Αα
14	ů	レーンコョンララッでラ
	3	δι α του το εοι βο ω μεν·
		GabebabaGaba
		7Aa16Ka1Ea
15		こどう・3ペーパラララ
		συναίθε κυ ρι ε δο Γοιερι:-
		a ha G EF G bG a G FF F

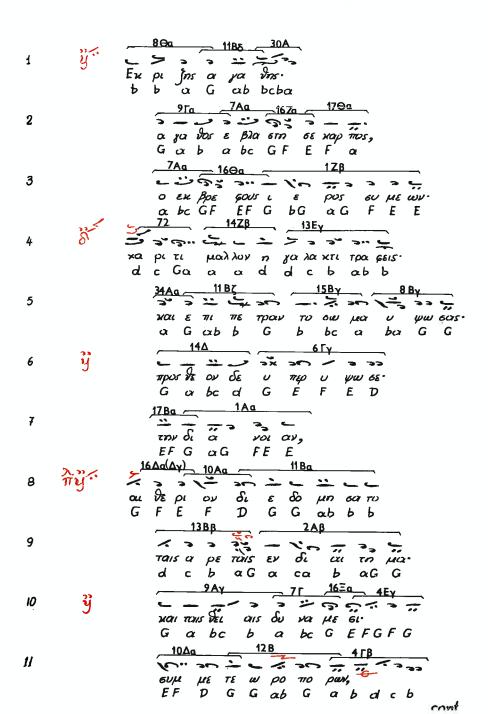
MMB. Tr. 1, Sept. No. 4 Sinai 1230,2v

To	αρασίου πα	3ιπαί 123 τριάρχου
	32	11E 15Δγ 29Αγ
1	ÿ	
		O EV 60 GL a ta Tav ta on pl oup for 6as. G G G b b b bc ba G a c b b
		15Aβ 13Eβ 30Bα
2	유법	ور کری کے کے کی کا کی کی کا کی
	J	προ οι ω γι ε λο γετου πα τρος.
		bbcbaddcbabcba
		<u>97β</u> <u>12Εβ</u>
3		3 6, 7 3, 3, 64 30
		אמו דחץ בטון חמ במץ אנו בוץ.
		G Gaba Gab G
		9Aa 7AB 16Ia
4		
		που το δυ γα μω σου λο γω· G G α bc b α bc GEFG
5		1Ea
		ου orn σα με yos. G bG α G FE E
		G bG a G FE E
		26 A 17Δα 7Γ 16Ξα 4 Eγ
6	せば	テァシーートのごくます
	ull	צט אס אח פסד עסד עסד אסטייטייטיי
		a a EF G a bc G EFGF G
7		16Za(Aa) 12Fa
•		TOU E VI QU TOU
		FE D G G b G
		2Ha
8		-1,0 / 3 33 6
		THS XPN GTO TH TOS GOU-
ā		a caba G G
_	33	9AY 7Aa 167E
9	ÿ	FF - 2 2 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5
		NOI TOS OIL DE GEIS NO TO BO DE
		GGabcbabcGFEa
10		δι α της νε ο το χου
		Si a tos VE o to xou
		abc ba Gaba
		7AB 161a
11		
		ws a ya vos
		a a be GEFG
12		, 1Fa
14		xai già an gow nos:-
		G bG aG FE E
		J V U U I L

M.M.B. Tr. 1, Sept No. 9 Sinai 1230, 4r.

Ταραδίου πατριάρχου

	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	
1	ਜੇ ÿ	O πνευ μα τι α γι ω. E G F E G α D
2		TAI TAI 16Hy  GUV ημ με νος α ναρ χε λο γε και υι ε.  D EF a a bc GF EFG α G F E E
3	नेपु	ο πων των ο ρα των και α ο ρα των · E G F E FG α EF α bα G G
4		G G a b a bc G F E E
5	Ay .	TOV GTE GA VOV TOU E VI AU TOU EU 20 JN GOV-  G & GF E E E E FG & EF & G G  (G F E)  21 16Ha
6	ÿ	GU JAT TWY EV EL PR YR G b aG E E FGa GF
7		TUN OP DO SO FUN TO TIÀM DM.  E E F G E F E D
8	मुष्	TIPE OPEL OIS TOS VE O TO XOU  EF G FE D E F GO O
9		TAG 16KG TEG  WAI THAN THEN A JE WIN GOV:-  bc G EF G bG A G FE E



# M.M.B. Tr. 1, Sept No 11 continued

		13Ββ2Αβ
12	नेपु	xpi etou ge yo yeu oi kn th pi ou.
		bbdcbGacabaGG
		9Гη 53Ay 3B
13	ÿ	
		του θε ου και ου τη ρος, Gaba Gaab
		1Aa
14		311 343 22 33 4
		των ψυ κων π μων:
		an a ru re e

M.M.B. Tr. I, Sept No. 12 Sinai 12304x

	~ .		Olmai 1200 72.
TOU	ι ετουδίτου	450	
,	22	12 Ta 15BE	
4	ÿ	下 一 一 、 多	
		ιο μιγη μο ευ νον ευυ	
		G G b G a bc a	
•		22A	
2			
		εις τον αι ω να με νει α b c dobc a bc a	
3		16Θβ 1Δβ ο ει ε πα τερ ευ με ων	
J		O GL E TIO TEO GU UE WAY	•
		GF EFG a G F E E	
4	ने भ	17Hβ 2Iβ  ναι το πρα ον της κοιρ δί ας	
•	2	ναι το πρα ον της καρ δι ας	600
		EEFGG cab Gab	α
5		νε ρα των μα κα ρι ε.	
		νεραπων μα κα ρίε.	
		abab Ga GFE E	
	200	10Εβ 17Αδ 1Δη 10ΒΒ	
6	₩¥	10, 30, 7, 5 3 5 3 7, 20	
		EL Wal HET E GENS ES n HWY	
		25 -	
7		2E a	
7			
		ο τιοι μην ο κα λος.	
		G caba G G	450
Q	23	3F 16KB	1ЕВ
8	ij	3F 16KB	1EB
8	ıÿ	all owe are earns ag n ywr	THE TIMES HATE.
8	ÿ	all owe are earns ag n ywr	THE TIMES HATE.
		all owe are earns ag n ywr	THE TIMES HATE.
<i>8</i>	y A Ÿ	all owe are earns ag n ywr	THE TIMES HATE.
		all owe are earns ag n ywr	THE TIMES HATE.
		all owe are earns ag n ywr	THE TIMES HATE.
		all owe are earns ag n ywr	THE TIMES HATE.
9		3F 16KB	bG αG FE E  σα με γος:  b αG G  4Bδ
9		All oux an ε etns ag η μων G G a b ab G EF G  17Λα  33Α  2 Αα  Εν α γα πη νε ω παρ ι Ε Ε FG G a F G α ca (F E FG) 9Αα  36α  19  και συν αγ γε λοις χο ρευ ων εν ου	b α G G  ABδ  Pa NOIS:
9		All oux an ε etns ag η μων G G a b ab G EF G  17Λα  33Α  2 Αα  Εν α γα πη νε ω παρ ι Ε Ε FG G a F G α ca (F E FG) 9Αα  36α  19  και συν αγ γε λοις χο ρευ ων εν ου	b α G G  ABδ  Pa NOIS:
9		EV a ya nn VE w map c  E F F G G a F G a ca  (F F F G) 9Aa 36a 19  **Xal GUV ay yE DOIS XO PEU WIN EN OU  G G a bc b a b a a a a  80Y 12E8	b α G G  ABδ  Pa NOIS:
9		EV a ya TIN VE W TIAD L  EF FG G a F G a ca  (F F FG) 9Aa 36a 19  RAII GUV AY JE DOIS XO PEU WW EV OU  G G a b c b a b a a a a  80Y 12E8  HEV WY L XE TEU E,	b α G G  ABδ  Pa NOIS:
9		All oux an ε etns ag n μων G G a b ab G EF G  17Λα  33Α  Εν α γα πη θε ω παρ ι Ε Ε FG G a F G a ca (F E FG) 9Αα  36α  19  ααι συν αγ γε λοις χο ρευ ων εν ου G G a bc b a b a a α  8θγ  12Ε8  μεθ ων ι κε τευ ε, b b Ga b Ga a	bG αG FE E  sta με γος. b αG G  ABS  pa γοις. bααG Gα c b α
9 10		All oux an ε etns ag n μων G G a b ab G EF G  17Λα  33Α  Εν α γα πη θε ω παρ ι Ε Ε FG G a F G a ca (F E FG) 9Αα  36α  19  ααι συν αγ γε λοις χο ρευ ων εν ου G G a bc b a b a a α  8θγ  12Ε8  μεθ ων ι κε τευ ε, b b Ga b Ga a	bG αG FE E  sta με γος. b αG G  ABS  pa γοις. bααG Gα c b α
9		23	bG αG FE E  sta με γος. b αG G  4B8  pa γοις. bααG Gα c b α
9 10		23	bG αG FE E   ABS  ABS  ABS  ABS  ABS  ABS  ABS  A

## M.M.B. Tr. I, Sept. No. 13 Sinai 1230 4v.

		07.121
TOL	ι αύτου	
		<u>34Ba</u> 9Za <u>8Aa</u>
4	ÿŕ	34Ba 97a 8Aa Η των λει ψα νων 6ου θη κη.
_	ฮ	א דעטע אבו שם צעטע פסט ליח אחי
		b b a Gabc a ba G
		9 7 2
_	73	9Ea 8 17 3 33 5 3
2	ÿ	しこう ノーラ コラベ ア
		παν ευ φη με πα τερ, G b α bα Gab α
		3A 1Aa
3		ت وه بي المه أنه المه أنه المه أنه المه أنه الم
		πη χα ξει ι α μα τα:
		πη γα ξει ι α μα τα· α b αb G α G FE E
	ने भ	10Fa 12Aa 30BB
4	ու A	
		και η α για 60υ ψυ xη EFD G b α G cα bcbα
		EF D G B & G Ca BCBA
		9Ea 23 3 3 3 3
5		27 3 /2 334 3
		αγγε λοις 6υ νου 6α,
		ay ye dois ou vou éa, G b a ba Gab a
6		3A 1AB
-		αξι ως α γαλ λε ται.
		abab G a G FE E
	/	13Ea 13Ba
7	20	13Ea 13Ba
Ť	0,	
		צ טא פסקוד עטס עשא פ
		debbdeb
		23 15BB 8By
8		23 15BB 8By
		ο ει ε παρ ρη ει αν·
		ed b be a bar G G
		9Aa 36A 19 4B8
9	ÿ	L L L L L L 2 3 3 2 3 L L 2 2 2 2 2 2 2
	3	HOLL HE TO THEN OR SHE HOLL THEN XO PEU WIN EN OU POR YOUS.
		GGGGGabebabaaaabaaaGGacba
		90
10		80y 12E8
10		
		pedar i re tou e b b Ga b Ga a
		p p Ga p Ga a
		7Aα 16Θα 1Eα
11		こらっ コーパーニョョー
		6w In you ras you was on your:-

М.М.В. Tr. I, Sept. No 14 Sinai 1230, 4х

1	धु <i>र</i> ः	80a 12Fr 97n
	IJ	H ya nn eas de o go pe b b a Ga b Ga b a
		36α 5 Cα 5 α 1Γα 1Γα 1Γα 1Γα 1Γα 1Γα 1Γα 1Γα 1Γα 1
2		ع در ایم می استان می در
		THE YE TO TW GL 20 60 GL OV
		abaaG EF G a GF E E
3		$7B\delta$ $107\beta$ $117a$
•	LE 1 "	KAT E EM KO BUOU E VE VOU
		a abc G G FE D Gab b
		23 15Bn 2Aa
4		( 30 7 30 /v = 3° =
		עשק ס די אפור ע עשי אונג אמי
		cd b c a ca b aG G
5	$\mathcal{Y}$	9A0 -16Zα - 01B - 17Aη - 17Aη
	ອ	NOI E 60 TIPON OL WILL AND WOOD TO THE
		$\begin{array}{cccccccccccccccccccccccccccccccccccc$
_		71 16ME
6		ت دو يو ق ح
		θει ον α νε δει xims. α bc G F E E
7	<u></u>	15Bε 28 10Zβ 4Aa  wai wy a ει η γω με γος φωτια  a bc a a a FG G FE D G a d c b
	UNIW	Hai wy a El n yw HE YOS GW TI.
		abcaaa FGG FED Gadeb
8	के य	QUS προς ε λαμ βα νές.
	n y	GUS TIONS S DAY BY YES
		b a EF a G G
9	ÿ	9Aa 8Ba 11ГВ
		ναιτρανώ τε ρύν του μα και ρι ου
		Gabaaa ba Gabb
10		E TU X6S TE XOUS-
		E TU XES TE DOUS.
		be a ba G G
,,	2%	<u>≃3</u> 9Δε
<i>!!</i>	ÿ÷	
		πρε εβευ ε bc bG α
		<b>-</b> .
12		7Aa 160a 1Za
		עשא אין איש איש אין איש איש איש איש איש איש איז עיז איז איז איז איז איז איז איז איז איז א
		a a a bc GF EFG bG aG FEE

## M.M.B. Tr. I, Sept. No 16 Sinai 1230 5r.

1	Till with Till	PELO XO PIS EΠ E W PL 6ΤΟ· a bc G EFD G ca b aG G
2	ÿ	E TIL TIN VIN XIN TWY DEL WA YUN SOU  G G a bc b a ba Gc a a
3		16Θβ 1Δδ 10Aa  12 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
4		Si of a d c b
5		Hai es o chum ha bon tan you ha tan con gba hon he ya.  P p p q q c p p q c p a ca p a G C
6	. ÿ	TWE TO ST HOLD TWY TOTY L OR SUN OR DU O HE YOU! I'M G G A bc b a b ab GFFG G bG a G FE E
7	नेधु	αλ λα πα τερ ο ει ε Ε Ε E GF Gα FE D
8		XPL GTOV TOV UE OV. EF a G G G
9	ÿ	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$
10		υ περ των ψυ κων π μων:- G EF G bG α G FE E

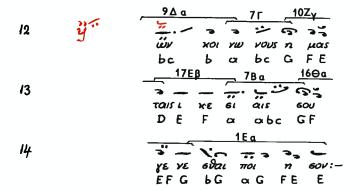
## M.M.B. Tr. I, Sept No. 17 Sinoi 1230 5r

i	ŋ¢.	8Θβ 11Γβ 15Ββ 87α  Ο τε τω πα θει σω μυ ρι ε  b b bα Gαb bc α b Gα α
2		THY OL YOU HE VINY E STE PE W SAS.  A A bc GF EF G bG &G FE EFD
3		TO TE RAI OI A GOE YOUY TES  Gab b bc b a ba Gab $\alpha$
4		7Aβ $16Iε$ $1Εα$ $πε ρι ε τω εαν το εω να μιν$ $α α bc G Ε G bG α G F Ε Ε$ $52Εβ$ $16Λα$ $16Λε$ $4Εβ$
5	سے سے دورت	16/a 16/a 16/a
•	LINW	VI YOU HES MY GOL GOV TO
		yu rai kes nr doi ear to a a G EF G G F EFG F G
		10Δa2Hβ
6		10 30 - 1-0 - 3 33 %
		μοι τα του πι μρουτυ ραγ γου.
		EFD G cab a G G
~	33	<u>9Ав</u> <u>34Ау</u>
7	ÿ	
		uaitns nt tas the spos G ex be b ex G ex
8		- 16Ξβ - 6Γγ - 16Ξβ - 2 = 33
U		α να κα δε 6α με γαι.
		a bc G E F E D
		8Ha9Aa7AB16 IE1Ea
9		THA ALV EV TO TOU GO TOU THA POR O'EL GOU YE YO VA GUY.
		THAL DIV EN TO TOU GO TOU THAL POL O'EL GOU YE YO NA GUY-
		a ba G G G a b c b a b c G E G b G a G F E E
	20/1	45a 13E6 34 FV  EIS 60 Ear 600 Tau yer rn ver Tos ex yu rau xos.
10	ÿŕ	
		b cde d d c ba G ad d c ba Ga b
Н		12 F6 160B 1 T6
• 1		YOU OW GON TOS TO YE YOU TWY ON YOU THUN!-
		nai ow oar tos to ye ros two ar spw Tiwr:- G b Ga a GF EF G a GF E E

## M.M.B. Tr. [, Sept. No. 18 Sinai 1230 5v

4	ÿ	NE ON GU TON b G ab b
2		15Ea 29 A β  κα θα περ ε λαι ας.  bc bG α c b b
3		The tou ve ou τρα πε ζη προση νε ξαι α G α b α GF E G α FE D
4	नेषु	US UL OS TUNV TTO PEU VEV TUNV D EF a a a b G abc G F
5 .		THY TOU XU PL OU O GOV.  EF G bG aG F E EFG F G
6		οι α μαρ τυ ρι ου FE D G G αb b
7		EU DO YOU EE EE DOU PL OS.
8	ÿ	yes 34 Aβ 2Δβ  was β)ε πεις τα α γα θα της α νω ει ων  G b a b a G a ca b a G G
9	ÿ	EV TPU GWV TNS DEL AS A YAD DL A GE WI.  G A b A bC GF EF G bG A G FE E  TAY 10ZB 4 FA
10	<u>u</u>	SUV TOIS YO VEU SI SI CA MAY TOS:  CA CA CA FE D G G CA b d C b
41	ਜੇਪੁ	μα μα α ξι υμ γη τε· d cb α ca b aG G  cont.

#### M.M.B. Tr. I, Sept. No. 18 continued



M.M.B. Tr. I, Sept. No.21 Sinai 1230, 6r

	,	Sinai 1230
uľ	νομ υογγέου	αχού
1	नेयुर	I E PEUS EV VO HUU TO TOS.  G a DE E GF Ga FE D
2		27B  5Aβ  1 ε ρευς εν νο μω τα τος.  G α DE E GF Gα FE D  17Aα  18 Aβ  με χρι τε λους εου.  D EF α G G
3	ÿ	E χρη μα τι 6ας, μα καρ αν νι με. G α b αb GEFG G bG αG FE E
4	L. I.	$\epsilon$ poup ywr yap $\epsilon$
5		μαι αρ ρη τα μυ ετη ρι ά. D G G α cα b αG G
6	ÿ	TO at ma et e xe as G bc b a b Ga a
7		U TIED XDI ETOU TOU VE OU.  D EF G & G F E EFED
8		και θυ μα ευ προς δε κτου C E E G F Gα F E D
9		17Ba 1AE 10 Aa  60W TOY TIPOG 'N YEY WAS-  D EF G a G FE F
10		D EF G a G FE F  AAB  D G a dc b
H	निधु	Trap pri ei av E xwr Troos av rove b b bc a b a G a F G
12	[4]	EX TE YWS I KE TEU E  G \alpha  b \alpha  bc  GF  E  cont.

# M.M.B. Tr. I, Sept. No 21 continued

		6 Aγ17 Aγ18Δα
13		ししし ショコ ニ ショ
		עשו עטסג דוו אוו עשד קשוד ע
		E E E F E D E F a G
		<u> 15ВВ</u> <u>ВВВ</u>
14		- 1 2 2 30 / 3 33 2
•		יאחץ מ בו בב אמ בנסי עודו עחץ.
		b b b bc a ba G G
		9 Fa 7 Aa 16Za
15	¥	95a 7Aa 16Za
	J	אמו דסט מע דחץ צו אמו אסט דמו
		GGababe GFE
		ρυ εθη ναι πει ρα εμιων.
16		533-
		סט בלח מבו דוצו סמ באנשי
		Fαα G αF G
		<u>7Γ</u> 16Ξδ <u>6Αα</u>
17	$\ddot{\nu}$	7r 16=8 6Aa
• •	J	אטו דוסו עט אוא עש וסד עוסד אסוד
		Gaba GE FE D
18		17 Ba 1Aa
		xai πε ρι sra se wy:-
		D EF G a G FE E

In line 14 the MS reads any for the In line 17 the MS has a strange division of syllables:

200 December 14 the MS reads any for the In line 17 the MS has a strange division of syllables:

200 December 14 the MS reads any for the In line 14 the MS reads any for the In line 14 the MS reads any for the In line 14 the MS reads any for the In line 14 the MS reads any for the In line 14 the MS reads any for the In line 14 the MS reads any for the In line 14 the MS reads any for the In line 14 the MS reads any for the In line 14 the MS reads any for the In line 14 the MS reads any for the In line 15 the MS has a strange division of syllables:

200 December 15 the MS reads and In line 15 the MS has a strange division of syllables:

M.M.B. Tr. I, Sept. No 22 Sinai 1230,6v

20	بيضيين ( 4.	Sinai 1230
DO	ιβυλωνίου	10 Ζδ 17Αγ 18Δα 16Δγ 32Α
1	नेगु	Bn µa ti tu par you map & stn xws. FGFE D EF a G G F E EFED
2		vai a ju vi so µe vos C E E GF Ga FE D
3		υ περ της α λη θει ας ε κραυ γα ξες: α α b α EF Gα bc G G F E
4	杂y <sup>?</sup>	16Δα 10 Δα 11 Δγ  ε δου ε γω και τα παι δί α  G F E F D G G α b b  34Δα 27β  α μοι ε δω κεν ο δε ος α  α Γ α G α S α b α G G G
5		W
6	ÿ	μεθ ων ε ετε εα νω θης α b a α FG G FE
7		EV OU PAVOIS.
8	नेपु	βα βυ λα ι ε ρο μορτυς· b cd b bc a ba G G
9	ÿ	9 Fa 8 Γy 8Δβ  πρε εβευ ων α παυ ετως.  G b α bα Gα α bα  9 A β 24 A 7 B δ
Ю		TWO TTO YE SWOW TOU EX SPOU,  G a bc b a G a bc
H		pu ενη ναι τας γυ κας η μων:- G FE D EF G α G FE E

MMB Tr. I, Sept. No. 23 Sinai 1230, 6 v

To	م نا يتومينيم ت	βαβυλωνίου)
10	U OLUTOU (T. E.	10 Ey 16 Ba
1	ने प्रे	
•	J	Βα 61 μου μρη πι δα
		EF DE E G GF E
		5 Aa
2		و د د د ازه ت ای ه
		η εκ κλη 6ι α. κε κπη ται.
		$E$ $E$ $E$ $GF$ $G\alpha$ $FE$ $D$
		17Zβ9Εζ
3		17Z 8 17Δa 9EZ
		τους ι ε ρους 6ου α γω νας
		DE FG a EFG b a
		160B 1AV
4		きょーノョョ ラゲ
		ι ε ρο μαρτυς βα βυ λα.
		GF EFG a GFE a
_		28 2BB
5	W.T.T	- 5 34, 0th - 1 4 4 5
	a c	ην και φυ λατ τεις α κρα δαν τον: ια α FG G G ca b αG G
		a ra a r
_	30 S	9 Ba 7Aa 160a
6	y	HOLL ON E TIL BOU JEU TOV.
		G be b a be GF EF
7		1 <u>Aa</u>
•		צע עשא עשא על איי.
		G G G F F F
	~ ,	$\frac{16 \Delta a(\Delta y)}{10 \Delta a} = \frac{2 Ba}{10 \Delta a}$
8	नियुर	くっ コー シーニニニア
	•	un put tou 6a tas a pi etel as 600.
		un put tou 6a tas a pi stei as sou. G F E F D G, ca b a G G
	33	9Aa 16Ha 5AB
9	ÿ	ود فراجورا و رو و د ب س م ع
	_	Hai HE YOU NO YOU BO BOL TO VII THE CL
		G G a bc b a GF E GF Ga FE D
		10 E8 17ZB 17 Δy
10		/ニューニュ シュニュ シ
		τα υ περ κρι ετου τυ θεν τα,
		EF D E FG a EF Gab a
11		17 Ba 1Aa
11		115 m 601 110 VOI 01 5:-
		με τα δου μα κα ρι ε:- α D EF G α G F E E
		u D LI G GG IL L

NB. The whole of line 6 is written twice, both times with notation.

### M.M.B. Tr. 1, Sept. No.24 Sinai 1230, 6v

<b>'</b> A.,	α τολίου	5011at 1200)
αν	C EDALOD	800 455-
	22/1	ως κα να ρος ι ε ρευς
1	ÿ	مر د رامه عاد د چي غير
	Ü	ωs κα να ρος ι ε ρευς
		b b ba Gab b bc bG
		13Ba 15By 8BB 8BB
2		13Ba 15By 8BB
		εις τα α για των α γι ων ει6 ε δυς.
		bbdcbbbcabaGG
3	23	9 A B 34 Ay
3	ÿ	~~~~~
		και την ετο λην την ι ε ραν
		GG a bc b a G a
		2 Aa
4		2Aa
		εν δυ σα με νος.
		α cα b αG G
		9 Ba 7Aβ 16 IE
5	ÿ	
9	g	
		a pepittus tu de w
		G bc b a bc G E
		1Ea
6		-1/2 = 3 5 5
		ε λει τουρ γη σας.
		E λει τουρ γη sas. G bG αG FE E
		10 Eq. 12 Ag. 11 Be 15 Bg.
7	नेपु	10 Ea 12 Aa 11 BE 15 Ba
•	" 5	ws a a pwy vo no de twv.
		EFDG b a Gab bc
		22A 52E8
8		30203
		משן חל סוד בחה שען בעו ובאר
		uai ws μω ens πο en γων α α b c debe b α αG
		$\frac{16\Lambda a}{100}$ $1\Delta B$ $\frac{4Ea}{100}$
9		16Λα 1Δβ 4Εα
		Tas qu Jas Tou 16 pa nã.
		EF G $\alpha$ G F E EFGFG
		40.7a(A=) 52.Pa 2.A
10		10 Za (Δa)  53 Ba  2 Δy  EV τη των κω δω νων α κραις νει ευμ βο λη,  F.F. D. G.
10		133 - c. c. 2 - 1,0 2 3 3 2
		EN IN TWO KEN DOW YOUR OR XPORTE VEI BUYL BO IN,
		δι ο και πε ζο νευ σαι
4		( J 3" 30 = 3 3 E
		δι ο μαι πε 60 νευ 6αι
		abab G a G FE E
12	ने भु	10 Fa 12 Aa 29 Ba
.~	" 9	المرابعة الم
		αλλα τα αι μα 60υ το δι και ον· EF D G b α G cb αbc b b
		ET LU G D a G CD abc b b
		cont.

# M.M.B. Tr. I, Sept. No.24 continued

13		34Aa 9 Fa 3A 1AB
		η μιν εω τη ρι ον βαπτι εμα γε γο νε· α G α b α α b α b G a G FE E
14	ने गुं	rai ws pu por eu w des
		$ \begin{array}{cccccccccccccccccccccccccccccccccccc$
15		Tas a no as an or yels
		7Aa <u>160a</u> 1Za
16		προς πο ρι εμον της αι ω νι ου ζωης. α α bc GF EF G bG α G F E E
17	ने भू	
		ζα κα ρι α τριδ ο βι ε· Ε Ε F G G ca b a G G
18	ÿ	11E 151 8By
	J	GGG b b b d bc a ba GG
19		24Aa 2AB
		Raiths & Di Ga BET O GUY EU VOS. GGGGGC baca baGG
20	>>	9Γδ 8Ζε 7Βα
20	ÿ	εχ τε νως πρε εβευ ε
		G a ba b G abc  16Ka 1Ea
21		16Ka 1Ea  1Ea  1 περ των ψυ κών η μων:-
		GÉFG 6 G A GFE E

### M.M.B. Tr. I, Sept. No 27 Sinai 1230,7v

â	στολίου	Sinal 1
٠.,	0.007.000	
1	Ÿ	10,20 420/2,222
	J	Δευ τε φι λο παρ θε νοι παν τες
		EFD G G ab G cb abc b
2		_ 13Εα - 47
2		> > > > > - > > >
		καιτης αγινειας ε ρα ετου α bc d d c b aG a
		_988
3		*>> = "
		δευ τε υ πο δε ξα οθε πο θω
		bcbaabcGFEF
		24Aa 2AB
4		30
		ετις παρ θε νι ας το καυ τη μαν
		D G G G c ba ca b aG G
_	11	
5	y	こ ニ し こ つ ラ ア ブ ヴ デ
	7	εκ πε τρας βλυ στα νου σαν στε ρε ας
		GabbbdabaEFa 
6		- 13 7 3 2 -
•		בחו חח אחו בחו לש חודי מון מון מון
		a  ca  b  a  G
		14E 33A 50
7	ÿ	- " ~ >×/=
	,	uou eu ens a ee uvou ens G bc d G af G a G
		G bc d G a F G a G
8		- = 2 2x - 7 30 13 7
		την βά τον του ά υ λου πυ ρος.
		a bc d G G aG E GF G
9	17	9A6 7Ba
,	4	TOU YOU ALL DON'T TOO
		του νιαίθαι ρον τος G a bc bG abc
10		0° 20 / 3 37
		nai qui ti for tos
		GEFED
Ħ		<u>" 3 </u>
		wai qui zi çov tas G E F E D  178a 16=8  1Aa  2as wu yas n wwv:-
		EF G aG FE E

#### M.M.B. Tz. 1, Sept. No 28 Sinai 1230, 7v

		Sinai 1230, 7v
į	ρραίμ καρείας	4
	77/	Tis o n ros.  bc G F E FG FG
1	ÿ	ン ラ ブ ファイァ ボ
	_	lis on yos.
		bc G $\uparrow$ E $\uparrow$ E $\uparrow$ G $\uparrow$ G $\uparrow$ 10 $\uparrow$ G $\uparrow$ C
0		10 Ζα (10 Δα) 2Αα
2		
		TWV & OP TA JOV TWV JL VE TAL.  FE D G G a ca b a G G
3	ÿ	8Eβ 24Γ 27α
•	,	ι ω α κειμικαι αν να πα νη γυ ρι ζει μυ στι τιως.
		G G a b a G c c b a ca b a G G G
		9 Ba 8 Za
4	ÿ	ニャップーンパー
	-	9 Ba 8 Za  Θυγ τα ρτι τε μοι λε γον τες
		$G$ bc b $\alpha$ $\alpha$ b $G\alpha$ a
		G bc b a a b Ga a $ 77 - 16Ma $ $ 48 $
5		⋋ ॐ ゝ, ゝ <i>→ / ♣ へ ひ</i> 、 ←
		α σαμ και ευ α στι με ρυν
		bc G F E G a E F DE E
6		bc G F E G a E F DE E
6		ο τι ον πα λαι
		ο τι ον παλαι FEDEF α G
		_
7	3.	-23 - 13 - 2Aa - 3 - 3 - 3 - 3 - 3 - 3 - 3 - 3 - 3 -
	J	πα ρα βα σει κλει σαν τες πα ρα σει σον
		πα ρα βα σει κλει σαν τες πα ρα σει σον· b b cd b d c b a ca b a G G  7Aa
		9Β <sub>γ</sub>
8		
		καρ πος ευ κλε ε στα τος
		G bc b a bc GF E
~		17Ζα17Δδ
9		" > 5" - " " 3
		n μιν ε δο θη FG a EF Gab a
10		71 16Mr
20		η θε ο παις μα ρι ά·
		a a bc G F E E
	Au.	6 Av. 17 As
11	λη γ γ	6Ay 17As
	J	α νοι γου 6α του τοις
		E FEDEF Gaa
		3A - 1Aa
12		
		πα ει την ει 60 dov:—

ab

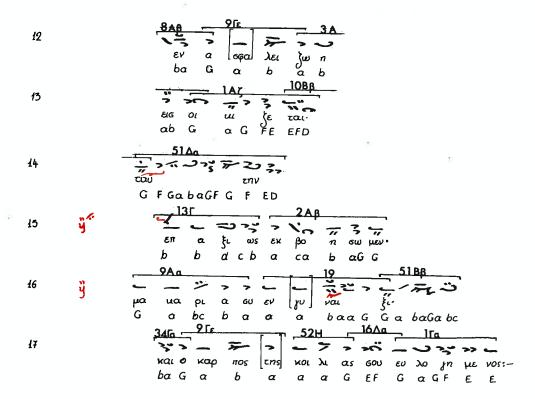
G

a G FE E

### M.M.B. Tr. I, Sept. No. 29 Sinai 1250,82.

	άνατο	λίου
i	ÿ	H mpo o pi ever sa EF D G G ab b
2		13Eδ 34Fβ πανε α νασ σα θε ου b d c b a Ga a 13Δα
3		Kaz ol kn zn pl ov.  a bc d c b bcba
4		14Aa 13Aa 30A  14Aa 13Aa 10V  15 a b c b bcba  17 107β  16 a b a bc G F E
5		$\frac{2Ba}{\sqrt{n}}$ $\frac{1}{\sqrt{n}}$ $\frac$
6	[" ]	9 Ba 8 Fa
7		G bc b a a ba Ga a  8AB Pla TAa 16Ka  This a v & ou ou ou ou ou as ba G a b a a bc G
8		TO DEL OV ZE HE VOS:  EF G bG a G FE F
9		Si ms.  D G a d c b
10	'nÿ	13Ba 15Aβ 2Aα  ι τα μος α δης κα τα πε πα τη ται  b b d c b cb α cα b αG G
и	ÿ	rau πag gε vει ευ α G G G a b Ga a

### M.M.B. Tz. I, Sept. No. 29 continued



#### M. M. B. Tr. I, Sept. No 33 5inai 1230,92

#### ίωάννου μοναχοῦ 10 Ey /~.. >2,2 ~ Ση με ρον EF DE E \_10Βε\_\_\_ 2 O TOIS VO & POIS PO VOIS. E E E E FD F E FGFE FG F E D 10E8 17Ba 1Ay 3 En a va nou o me vos de os. EFD EFG a GFE a \_16Λβ\_\_\_\_\_16Λε\_\_ θρο νον α γι ον aG EFG G F E uii αG 42a 6AB 17Ba 1Aa 5 E πι yns ε αυ τω προ n τοι μαι GEV. E E E DEFE FE D EF G α G FE E 6Aβ 17Aγ 18Δγ 6 στε ρε ω σας FE D EF a G a tous ou pa vous. EV 60 GL Gabab aGF EF 9Γδ 7Αα 167β ου ρα νον εμ ψυ χον y 8 ba bc GF E Ga 2 2 20 211 4 9 ειγ αν βρω τι σ E D CD D D 6KEN a 6EV. 10 maz E EF G aG FE E FE ことがコンジ

a kap που γαρ ρι ins G ab G a bc

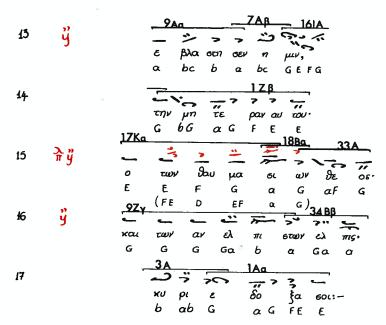
b bc

b bc a ba G G

11

12

## M.M.B. Tr. I, Sept. No. 53 continued



### M. M. B. Te. 1, Sept. No. 34 Sinai 1230, 9v.

_	2 - 1: - 2	(
τού ο	·	άννου μονα <b>χ</b> ού)
1	2 3ic	5100 
	·	Αυ επ·
		G FGabaGF G FED
2		958 818
4		η η με ρα κυ ρι ου
		G G b a ba Ga a
		17Ba1BB
3		a gal hi a offe ha oi.
		a gaλλια σθελαοι· DEFG αGFEE
		- <del>-</del> -
4	₩ ÿ	ニュング・ファーシュル
	3	ι δου γαρ του φω τος ο νυμφων.
		G G EFD G ca b a G G 9 T 9 16 9 C
	20	290 290
5	ÿ	KOLL 71 BL BAOS TOU DO JOU TAS SW 715.
		Gabcbacab a GFEFQ
		(G <sub>ZAB</sub> G c a ) lEa
6		- 5 32 4 -12 -3 -
86		εκ ja στρος προε λπ )υθε· α bc GEFG GbG αGFEE
7	⊋ ÿ	
	J	και η μα τα α να το λας πυ λη
		E E E E EF G G E F G G ab a
		71 21a 16Ha
8		$\alpha$ no $uv$ $\eta$ $\partial u$ $\epsilon a$
		a bc G t FGaGF
9		
		προσίμε νευτην εισο δον ΕFGαGF EFED
io		16=E 6AB 161K
		του ι ε ρε ως
		G E FE DG GE a
и		116 10BB
15		του με γα λου.
		του με γα λου· baG F FGD
		51\triangle a
12		- 51Δα - 25 - 25 - 25 - 25 - 25 - 25 - 25 - 25
		μο νη. G FGabaGF G FED
		1.

contin.

## M.M.B. Tz. I, Sept. No 34 continued

M.M.B. Tt. I, Sept. No 35 Sinai 1230,9v.

τοῦ αὐτοῦ (i.e. ἰωάννου μοναγοῦ) \_\_1HB\_ θει λn KOLL úγ βου μα ٤F α α 6 G a G FE 7 7 73 2 GOL YELS. πε ρι D G G a b d c b 74 3 gu Ь α EF a ca b aG GaGF α 33A\_\_ \_\_\_\_1177 4 αλ λα παν των 17 μα E F G G αF Gab 15Ββ \_\_\_\_ 378\_ 5 θεν των YEV yn bc bα Gab α <u>\_\_ 161a</u> 6 θε 0 πρε πωs bc GEFG а 1Ea 7 73 -77 λαμ ψεν. περ G bG a G FE E 8 a yo vou εţ uii KOLL bc G EFD α a α <u>\_\_ 17Γβ</u> 9 δο ξως 17CL ρα τε χθει 60: μη τρος٠ Gα Ь ab aG a ΕF 10 TE KEV EV GAP KI abc G GFEEF 17Ag 11 παν των θε TWY  $\alpha$ G bG EF \_\_\_\_16<del>0</del>a 1Za 12 περ φυ OLV  $\boldsymbol{a}$ 6710 pou ja espos. EFbG bc GF a G

# M. M. B. Tr. I, Sept. No 35 continued

13	u 11	7Bδ 16Bβ 4Fβ(4Fy) η μο γη ηυ λη
14	OK.	a abc G GF EFG F G  (10Δa) 10Za (G E) 2Δβ  του μο νο γε νους υι ου του δε ου- FE D G G a ca b a G G
15	ÿ	FE D G G $\alpha$
16		27Γ 28a  1 3 3 6ε γου λα ξε.
<b>17</b>	ÿ	α α α ρ G ca b aG G  9Eε 34BB  και παν τα 60 φως G b α Gα α
18		OL KO VO UN GOS WS OL DEV OU TOS.
19	ÿ-	TO G G G C C ba ca b a G G  28  328  70  70  70  70  70  70  70  70  70  7
20		α α α FG G EFED  65β 16Λα 1Εα  σω τη ρι αν απ εφ γα εα το:-
		CDG EFG bG aG FEE

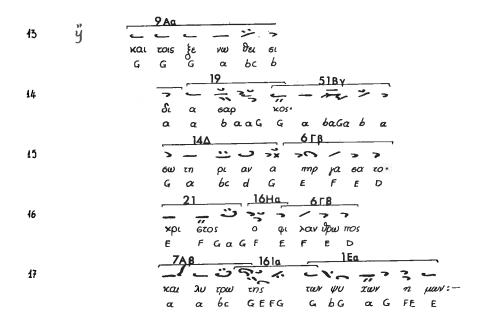
M. M.B. Tr. 1, Sept. No 36 Sinai 1230, 10r.

_	γου μονα <u>τ</u> οῦ) 10H53Γ6Aβ33Β
Ay"	アップットにしのぼりょだんだ。
_	Ση με ρον στει ρω τι και πυ λαι α νοι γον το
	GFEDGG a EFEDGG out G
27	9 Fa 49a ==================================
ÿ	こりょうぶ ニーナ
	και πυ λη παρ θε νι κη,
	G b a a G f Ga a
	3A 1AY
	عرد در مد مد
	θει α προ ερ χε ται· b ab G a G FE a
	7P 107. 12 AR
O., _	7By 10Zβ 12Aβ
3"-7"	6π με ρον μαρ πο γο νειν
	a be a fe D a G b
	2AB (2F)
	α bc G F E D G G b 2Aβ(2Γ)
	η γα ρις απ αφ γε ται·
	η χα ρις απ αρ χε ται· α G c c ca b aG G
	9Αα (α ςα)52Δα 16Λα
ÿ	9Aa (a ca)52\Da 16\Da
J	εμ φα γι ζου εα τω ιω εμω
	Gabcbab aG EF
	1Γζ10Αα
	117 10Aa
	θε ου μπ τε ρα· G α GF E F
	4AB
	de ms.
	D G a d c b
2.3	13Ba 15 A'B
âÿ	
	ta ε πι μεια τοις ου pa γι οις b b d c b b b b c ba
	2 a
	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\
	GUY a may tain
	ca b Ga a
	7Aa 16Ka 1Ea
	7Aa 16Ka 1Ea
	אינט אינט אינט אינט אינט אינט אינט אינט
	a a bc G EF G bG a G FE E

M.M.B. Tr. 1, Sept. No 37 Sinai 1230, 10z.

τοῦ αὐτοῦ (i.e. ἰωάννου μοναχοῦ) με poy £F DE <u> 17⊖β</u> 2 σμι ου παγ κο ρας α E FE α D 3 μι προ Ol £ F αG on με abc Gab 15 By 5 ε πνευ 6αν αυ Gab $\alpha$ 6 ρι αs про ay αb a G FE α G 7 τns Ģυ 68 Ь Ġ ab Ь c db cbacba 30A 13Δα 8 çω λε δι α Tal GTEL λυ G α bс c bcba 134a รีย นาบ อัยเ นาบ 9 γοφ 6781 ρα μη znp Gα а Ьc d bcba 10 THIS THOUP DE YEU ou 6ης με τα Ф G α Ьс Ь α 14Aa 44 KTI GOV TOS 60 G d 9Εδ 12  $\alpha$ α

### M.M.B. Tr. I, Sept. No 37 continued



M. M. B. Tr. I, Sept. No 38 Sinai 1230, 10c.

```
ανδρέου
                \Sigma_n
                     με
                           por
                     DE
                    12 | 8
2
                               αν να τι κιει θε
                      στει ρα
                                                       nou da.
                          Gα
                                bababa
                                                 a G FE E
                             12 Αα - 11 Βδ
              10Ea
    7 4
3
              100 300
               τηγ
                     EUC
                         πα
                              שע דעש אַב
                                         YE WY.
               EF
                     D
                          G
                              ь
                                  αG
                                        \alpha b
                          <u>____ 13 r</u>
                        ευ λε χθα εαν [εις]
                                           Kat
                   G
                        6
                           bdcb
                  9 Γε
     ÿ
5
                  тир пан Ва
                               61
                                   λEI
                                       KOL KIL GEEL
                                   Ь
                                        α
6
                       6tu)
                                  θε
                   χρι
                              τω
                                      w·
                   G
                       a G
                               F.
                        5Aa
                      ひいつっっ
              EIS EX
                      лλη
                           ρω
               E GF
                      Ga
                           FE
                     11Γδ
8
                       vei as
                  TTS
                                      ĸo
                                                pu
                                 Oι
                                                    as .
                   G
                       Gab
                             ь
                                 Ьс
                                          . ba
                                      α
                                πλα εθη μεν οι γη
              δι
                  715
                       αν ε
                                                 yε
                  \alpha b
                           ca
                                ba GaGF EF G
               11BB
                                             ____17Γδ
                           2Θ<sub>γ</sub>
     ÿ
10
                                       じょりひょぶ
                          15
                                νι όθη μεν εκ της φθο pas
              wau ay
                            KOU
                  αЬ
                           cα
                                6
                                    a Gab G
                                                 EF Ga
                   27 17Ba ___
                                  __JAa
11
                                        3 -
                                  77
                   προς ζω ην

α D EF
                              とかり
                                   α
                                        אח אדטי:-
                          EF
                              G
                                 a G FE E.
```

### M.M.B. Tr. 1, Sept. No 44 Sinai 1230, 11 v.

τοῦ αὐ	τοῦ(i.e. ἰωάννο	υ μονοχοῦ)
	-	10Δα12Γα15Βε
1	Ÿ	ノマックナー ボーネック
	J	Τον εγ και νι σμον τε λουν τες.
		EFD G G b G a b c a
		22 A 8Ea
2		ニーーをファイ
		του παν ι ε ρουνα ου
		a $b$ $c$ $dcbc$ $b$ $a$ $b$
		12Εε
3		3 3 - 2 0
		tns a ya gta ge ws
		a G a b G a a
4		
		σε δο ξα ζο μεν κυ ριε.
		a a b ab G a G FE E
		28 (10Δα) 10Ζβ
5	e-11 - 7	」 こここ りょうりょ
	uni	τον α γι α σαν τα του τον·
		a a a a a FG G F E
		11Ba (EF
G		7 " "
		και τε λει ω σαν τα
		DGG abb b
		<sup>b)</sup> 13 B a 15AB 2AB
7		< 2 7 6 2 Km # 3 77
		τη αυ το τε λει 60υ κα ρι τι.
		de b cba ca baGG
	••	9Aa 19 4A6
8	ÿ	ニョットーたらったっか
	3	και τερ πο με νον ταις εν αυ τω.
		G a bc b a a a b a a G a d c b
_		<u>1588</u>
9		- J 70 /= 30 -
		r E bond hon he nous.
		b bc a ba G G
	>)	9 Γε 7Αα 16Θα
10	ÿ	こここかりつろう
		υ πο πι στων μυ στι καις
		G G a b a bc GF
		1Za
41		was $L$ $E$ pair $TE$ $AE$ $Tais$ $EF$ $G$ $G$ $G$ $G$ $F$ $E$ $E$
		was i e pais te de rais.
		EFG bG aG FE E
16	2.11	17/\a
12	ڄڄ	
		και προς δε το με νον
		E F FG G &

# M.M.B. Tz. I, Sept. No 44 continued

	160y 2Ba
13	
	EN TEL POS TEUN SOU YOU GOU.
	GF EF G ca b aG G
	11Aa
14	2)
-4	tas av au µa ktous
	G G G ab b
	•
45	
	και α χραν τους θυ 6ι ας.
	b b bc a ba G G
	12Δ,7Βδ
16	y
	$\frac{12\Delta}{\alpha v} = \frac{7B\delta}{\sqrt{6}}$ $\frac{7B\delta}{\sqrt{6}}$
	G G a b G a b c
	16Ma 5Aa
17	9231253
17	τοις ορ θως προ6 φε ρου 6ι.
	G F E GF Ga FE D
	17c 7Ra
	17Za 17Ty 18Ay 7 ba
18	την εκ των α μαρτη μα των μα θαρ είν.
	· · · · · · · · · · · · · · · · · · ·
	E E E E FG a EF a G abc
	160a
19	3-3 - 1/0 = 3 3 -
-	μαι το με γα ε . Σε os:-
	GF EF G bG aG FE E

```
ζωαννου μοναχού.
                                           M.M.B. Tz. I, Sept. No 48
             _16Δβ _____ ,__27.Αα__
                                              Sinai 1230, 12v.
4
             Εχ ναι νι α τι μα ωθοι.
                G F E G a D
                17A8 27 17Ba 16Ay
2
                 ποι λαι ος νο μος και κάι λως ε. γων.
            D EF α α α D EF GF E E
             - 5 5 5 55
3
             μαλ λον δε τα νε α
             EF a G FE DEF E

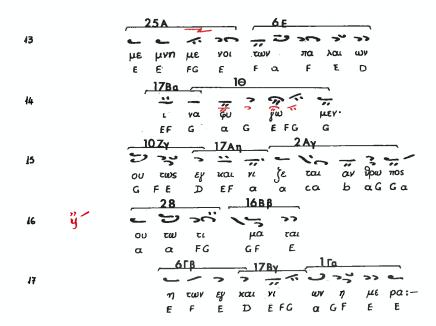
(a G F DEF E) 178a 16Ay 10 fa
4
                 zi μα σθω δι εγ μαι νι ων-
                     FE D D EF GF E EFE
               12 Ta 29 Aa 15 AB 11 A
5
                       ζον τοι γαρ νη σοι προς θε
               KOLL VI
                G 6G
                       acbbcbaGab
6
                                  60 'i' as.
                 ως φη 6ι η
                 b b bc
                                ba G
                             \alpha
            デッタAy 7A8 10 7y
ジョコーごうごって
7
             α6 τι νας υ πο λη πται ον
             bc b a a bc G G F E
                   17 Eε 78α 16Zδ
εξ εθ νων εκ κλη 6ι ας.
8
              Tas ef eb vuv ex xin
D E F a F a b c G F

15Be 28 16Ba
              べっつ こしょうちょう
9
             αρ τι καθι ετα με ras.
bc a a a FG GF E
     UII
                6Fa 17AK 3B 1BB
10
                 και πη ξιν λαμ βα γου εας βα ει μον τιμ θε ψ. Ε F E D EF α ab ab G a G F E E
               10 Bç _____ 51 A
    計資
                 ンコローディンス
И
             δι ο και η μεις·
E F D D FGa bag
                         ______5Aα (5Bβ)
                 このずるいらん
12
                 τα πα ρον τα εγ μαι νι α
                 G b aG E GF Ga FE D
13
                  πνευ μα τι κως παν η
```

#### M.M.B. Tc. 1, Sept. No 49 Sinai 1230,12v.

ὶωάννου μοναγοῦ SEX 601. σθε Ey D ζε G και G EF a bc 10Aa **4**Γβ 2 1000 OY και τον лα λαι ΕF D G G a b dcb 3 עסת שסש אסע α c Ь 9Aa 161E ÿ 沙 εч wai VO τn ns G Ьc 5 σθε. πο λί ε τευ ЬG a G FΕ <u>-- 15Βε</u>\_ 6 πa uii σι  $\chi \alpha$ λι νον 171 bс α α GF α а α Gα 17Ba 7 EF G a G FE 17AL 8 τα τα με λn EFE D EF α 9 χω που δα 6W a G aь FE 10 uni 6**Q**Y ξυ λου βρω ειν πα  $\pi o$ yn ραν του G Fε D 11 GOV CES\* μι 6n FE DEF E E 12 δı ĸœ του Ε ε ٤ F GF

### M.M.B. Tc. I, Sept. No 49 continued



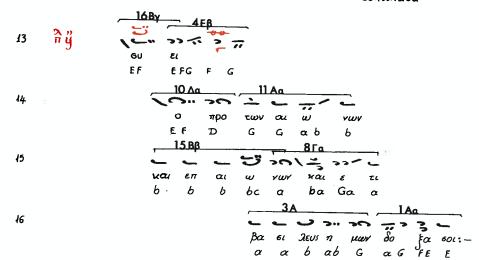
M.M.B. Tz. I, Sept. No. 50 Sinai 1230, 13 z.

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M.M. B. Tz. 1, Sept. No 51 Sinai 1230,13z.

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## M.M.B. Tr. I, Sept. No. 51 continued



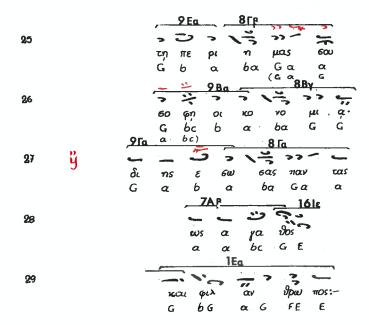
M.M.B. Tz. I, Sept. No 54 Sinai 1230,14 z

θεοφάνους πρωτοθρόνου \_11Гε\_ Δευ τε α παν τα τα ε Gab babcha Gacb bcba 9Ea 8Ba 11/y 13/ το ευ λο yn με νον fu λον προς ων νη εω μεν-G b a ba Gab b d c b a ca b a G G 2 9Αδ 3 ou ye yo ver, a bc bG a7 16/4 - 1/4 4 δι και ο ου ω νι 05 a a a G EF G αGF 11 Bδ 10Ea 12Aa 計資 5 γαρ προ πα το ρα OΣ b a G EF D G αb 10 ів /に、30 テ こ つ 30 まま 6 cq q cp o a na th sas d d e bc a \_\_\_15 Aβ \_\_\_\_\_>¬ 7 των σταυρών δε λε b b c b a ca \_\_\_\_4Ββ ч μαι πι πτει ματ ε νε πνεις G bc b a a baab G a c ba8 NOL TI TEEL KOT E VE 78a 16Za 6FB 9 apc QE E E E D 17Ζβ 17Δα 97ζ 10 τυ ραν νι δι κρα τη εας D E FG a EF. Ga b \_\_\_\_\_1E8\_\_\_\_\_ 7Aa\_\_ 16@a シューショーショー u του βα ει λει ου πλα εμα τος. bc GF EF G bG a G FE b 8 00 11 Bo 15 A6 12 μα τι ab b c b a G

### M.M.B. Tz. I, Sept. No 54 continued

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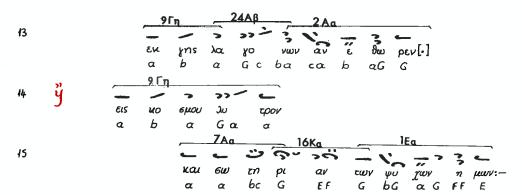
## M.M.B. Te. I, Sept. No 54 continued



M.M.B. Tc. I, Sept. No 55 Sinai 1250, 14 v.

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### M. M. B. Tr. I, Sept. No 55 continued



M. M.B. Tt. I, Sept. No 56 Sinai 1230,14v.

κυπριανού μοναγού 11<u>Βε</u> 12 A a ÿ 1 H των χει αλ ρων λα G G Ь G Ьс 2  $\pi \alpha$ фι αρ 100 ٤ α κωβ• του Ь c d С bα  $G\alpha$ α α 3 λο a TWY 33 KYWY. 84 Ьс c d c Ь Ь d α е **9Ζδ** 9 Z B 34Aa 4 του втам рои TO κρα ται oν G  $G\alpha$ Gα Ь Ь а α α 5 δn Во λov.  $\lambda \omega$ 68 вυμ ε προ G αG FE Ь ab α 26 A 17 <u>a</u> 6 υατ **1**Ον 17 ε περ MEI5 EF G Ьс EFD α a 7 ρα utnαρ YES. φU λα ΕF abaG G G  $G\alpha$ 6 a ÿ 8 Sou ьθε vws. צמס TWY μο νων παν baaG G a G G ь α a α 7 Ba \_16Ξβ *\_\_\_* 9 δι ga day ya. κω μεν εĸ ω Ε F Ε Ď a 6c G α  $\alpha$ λ ν π q 10 κου του βε λι αρ E٧  $\alpha U$ G D E F αF α <u> 15 F</u> 11 201 ES[.] βœ ZDY 6 YUY ĸa τα Ь d G G Ь bс Ьα 5Aa (5BB) 9 Aa 12 χŶ ληκ τρο 67.0U à μα που GF FE αGF Ε G Ьс (G

# M.M.B. Tz. I, Sept No 56 continued

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M. M. B. Tr. I, Sept. No 57 Sinai 1250, 15 c.

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M.M.B. Tz. I, Sept. No 65 Sinai 1230, 17z.

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M.M.B. Tc. I, Sept. No 66 τοῦ αὐτοῦ (ί.ε. λεοντος δεεπότου) Sinai 1230, 17c. 16H8 ၁၂ဝဝ ရက <u>ငယ္နွ</u> al Gw vai. Των aG F E D G F 6AY 17A8 7A8 16la IEE م ور مر a be GEFG G bG a G FE λαν. -ξυ λον το FED EF 3 G a deb η λευ θε tns ap jai αs a be de b cd d 9F8 160 B \_\_1Δγ\_ 5 - الد بيد د يول ن α δομ. κα τα pas της του θα να του ο b a GF EF G 7A6 16A6 10B6 6 3"-7" de ker ois on he por a bc G G F EFD \_\_\_\_\_15BZ\_\_\_\_\_ 7 av u שטו דחץ שש אחץ. υ ψου με עסט דסט דסט G = bGa be a α cα 9Γη 9 Ζδ ÿ - 2 21. Luce 8 εκ θε YN THOU GE OY ου αι του με baGababGaGFEE G G 9 all yos • μο d fed cdc 10 le abcba # ton tos b a **ઈ**ε 6ПО Ta · λα εμος γε FG α E F YOU n HIV Gca 13

M.M.B. Tz. I, Sept. No. 67 Sinai 1230,17z.

τοῦ αὐτοῦ (i.e λέοντος δεεπότου) Σταυ ρε Д<sup>О</sup> Е שט DΕ 2 χρι D α દો 671 צעטע 17 G G b Ga  $\alpha$ α 3 πλα מע με νων GFEF G G Ε α 52z 10.Ea 9Εδ **~**∹ ુ ઇ μα D με עשע λι b αb G αG 5 73 EV nо λε μοις KO5. G EF GFΕ E 21 6 KOU με rns α 66α λει Ε FGa GF Ε 7 νo GOUY TOUY α τρε. EF а α G αF G 52Aa\_ 8 κρων να α 6CA 615 ox G Ε F G 7г 9 Ĵε η ε 60Y n µas:-

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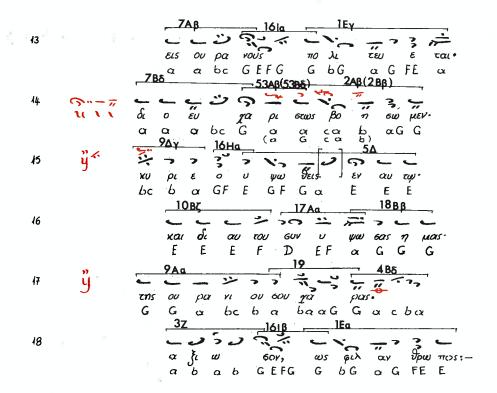
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#### M. M.B. Tr. I, Sept No 68 Sinai 1250, 17 v.

θεοφάνους πρωτοθρόνου るで、サーチョンさくみ GaGFG af G a b cba b G b a G bcbab 2Δα 3 3 tor the jw φU  $c\alpha$ Ь. 3 עשט yns εĸ てわら α b G Gα 5Αα (5Ββ) αν ( 6τα με Ε GF Gα FE 172β (G α) YOY . D 5 πα γεν αυ τιψ **TO**5 χρι Gab FG a EF  $\alpha$ 7Aa 16Ka **6του** ται την α YOU GEO GIV. a G F E E Ьс **22**в EF G bG G YOV 1EP pais. Kan αy ψου με 617 L E dcbc bG b d  $\boldsymbol{a}$ cα vous. 8 την αυ του προς ου ρα babaaa Gacba Ьc 9 αγ γε λει  $\alpha \nu$ ψω GLV. G a G FE a b ab 75. 75 33 10 δι D Gadeb 41 τε ρον ου ρα μα με 77 сb a bcdc 12 מחץ na ta mw E15 G bс ba

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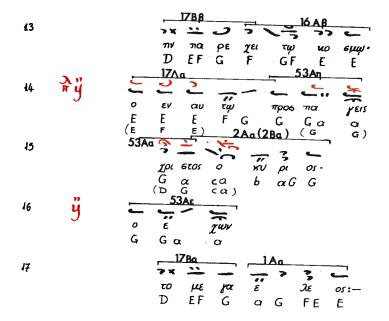
## M. M.B. Tr.I, Sept. No 68 continued



M.M.B. Tr. 1, Sept. No 69 Sinai 1250, 17 v.

βυζοιντίου Ση με ρον προ C E E G F 2 EF a a FG G EFED 5 Αα(5Ββ) こどうかっ 3 στοι εισ δε χον ται KOL ITL E GF Ga FE D Jou Z EOV EX π0 a GF16KY E F E 5 YOU μα τα· каг хан ва 6LY FE E E F G ЬG DG G α G ψυ gns ze και ωυ G b α α GF μα a a GF Ga 7 as каі па *6ης μα λα* E E EF G a G F ÿ θ **\*\*** με αυ τον OL 61100 6W a a G F  $G\alpha$ G Ь 9 τη τα ρα και τω DEFG F GF 10 δι βψ α TITY α μαρτι ΕF D D а ю<u>А</u>в u E.F a ra EF G ov GF E 12 δι α אלוד ρα δε E F ED EF D  $\alpha$ 

# M.M.B. Tc. I, Sept. No 69 continued



M. M.B. Tz. I, Sept. No 72

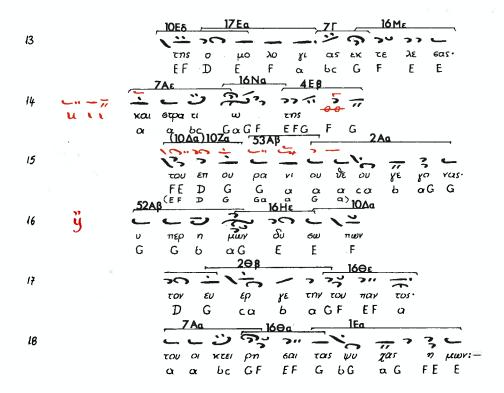
Sinai 1250, 18v. κωνεταντίνου δεοπότου ธะก G b aGF G FED 6 bcba  $\alpha$ 9ZY 17 18AZ 2 ε γνω των μαρ τυ ρων σε Gaba EF αGα 7Aa 16Ka lΖγ 3 a Im ta. του χρι 6000 VL KN COX G BG a G F E EFD E F bc G 51Δβ こくりご りひろ 4 FGabaGFG FED 5 a Ga GF ξι E m yns E F , \_\_17[a\_ 9" 6 ta ba far עמד Ka λει ΈF EF α G G <u>52Αγ</u> ÿ אכנו חם דבו אחץ מ עצ נ מץ 6 β β β β G CX JE STE 77-8 Bos Du με FE Da Ε Ε -16⊖a \_-\_\_1EB\_\_ tons he one on ton en e tor has. 9 α bc G F EF G bG a G FE. E F G F G 10Za (10Aa) 4 Γβ 10 TL KOLI VI KID KWS FE (EF DGG a b deb 11 και η *σχυ* α βα G τους βαρ βα ρους 6XU vas. G GTOU . ÿ 12 μαφ τυ περ χρι TO OY.

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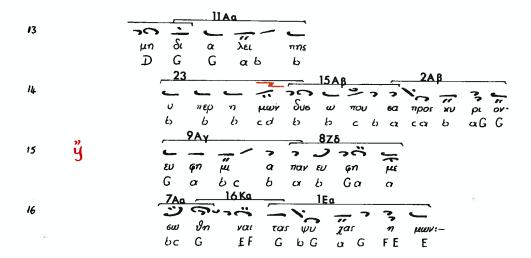
### M. M.B. Tc. I, Sept No 72 continued



M. M.B. Tr. I, Sept. No 78
Sinai 1250, 201

καβίας μοναχής ,10ЕВ , 17ЕВ 1 Sı ทง ชิเ вμε EF D E F abc G 2 pe tais. cous a G F E EFGFG 10Δβ \_\_\_17Εβ 7Bδ 3 GW TI GHE KOI! 311 E F abc G D EF  $6\mu \psi$ . EFED 5 μυ ρα προ τε ου E E GF Go F E 17Βα \_\_\_ 1Δβ εν τοιις καιρ δι οιις των πι ετων. EF G a G F E EFGFG η εκ της ε ω G 8 GTHP GOT EL YOS. α να τει λα σα ως G αG ь d с b G а са 6 Ь και α θροι εμον ποι η 6α G GabaGcba 7r 16Ma 5Aa いるいろ 10 YL OU TIYEU της του α μα TOS-E GF Ga FE bc G F D 17Ey zn 68 44 zm 601 777 Gab a Ot 12 דסט שבו סטב πα TΕ pas-E F a bc G

# M. M.B. Tr. I, Sept. No 78 continued



M.M.B. Tc. I, Sept. No 79 Sinai 1230, 20c.

ζωφιλιού πολακού 27Aa 4 δε ξι ων του σω τη ρο Ε Ε FG Ε G α D  $\delta \varepsilon$ σω τη ρως. \_\_17Aı \_\_\_\_,28 16Ba ニー・ことがいっ 2 παρ ε Gin η παρ νε yos EF a a a FG GF E 6Aβ 17Aδ 18E 3 και α θλη φο ρως FE D EF a G και μαρ τυς. FE DEF EFE 12 Γα 9Γα 6Δα 51A περι βε βλη με νη ταις α ρε ταις DG bG α b α α FED FGαbαG το α ητ τη τον a ca b aG G <u>\_\_\_\_\_8га\_\_\_</u> シッノラッハー 7 και πε ποι κιλ με γη 8 9 CGGGGEFGG&GFE 37 29A 510 10 και βο ω 6α προι αυ τον· b b G αb c b c db cbacba G 11 α γαλ λι α σει EY ccccded 12 λαμ πα δα κατ てかり E 200 60. ь b c G a ca b aG G

#### M.M.B. Tr.I, Sept. No 79 continued

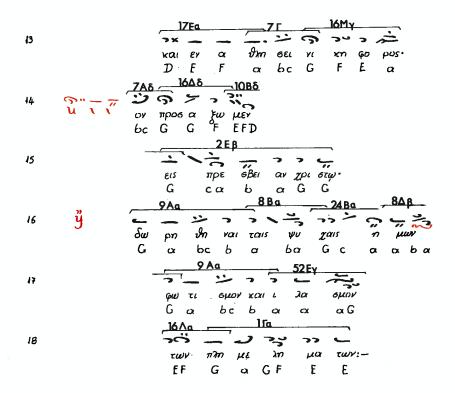
13	ÿ	9 Γδ
14		17Aa 18Ba 33A  2pi ote o ve os.  Ef a G a F G
15	ÿ	9Ea 8Γa  ο τι τε τρω με νης  G b a bα G α α  5 σ σ σ σ σ σ σ σ σ σ σ σ σ σ σ σ σ σ
16		G b a ba G a $\alpha$ 52 $\Delta \alpha$ 16 $\Delta B$ 53 $\Gamma$ 70 $\sigma$ $\sigma$ $\sigma$ $\sigma$ $\sigma$ $\sigma$ $\sigma$ $\sigma$
17	z Tabi	$\rho$
18		TAα 16Θα 1Eα  YULL GI E ETI OU PA VI E'  bc GF EF G bG α G FE E
19	u	au tos tais i ke 6i ais.  a a EF a bc G GF E
20	मे भु	17Λβ 1Δε 32Α χα τα πεμ ψον η μιν EFG α G F E EFED •
<b>2</b> 1	N .	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
22		THE $\chi_{E}$

#### M.M.B. Tr. 1, Sept. No 81 Sinai 1230, 20v

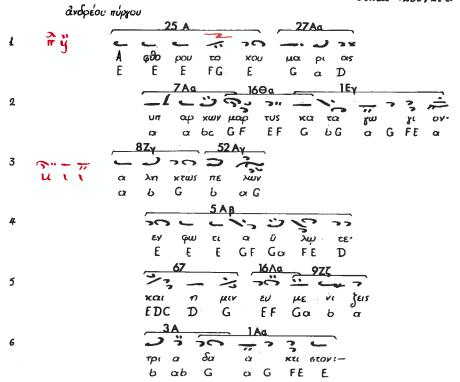
εφραίμ καρείας δευ τε ρος ι ωβ 2 ευ στα θι a bc GF 3 τφυ βι φυ Ε οι G っつじっつくろ tous a Diaus Kou tous ECE GO YOUS b cd b bc ba G  $\alpha$ Ÿ εις προ τρο mny a pe twy Ga ba G 7Aa 160a -6 ε αυ τον n pur en a bc GF EF G bG α G

26A 17Γβ 78δ 16Ξη 10Βγ 7 κου ετη λην καρ τε ρι ας abc G G EFD α EF περ bas a in trus. 8 ca b WB th a PE ÿ G be ba baaG Gaeba 7r \_\_\_\_\_\_16Mŋ 10 Ju ju wan tois te xvois. a bc G F E 16=n 10By Ų στος εν βι ψ 771 a abc G G EFD 20a 12 a kpa bar TOS EY πει ρα 6μοις. G Ь a GF ca

### M.M.B. Tr. I, Sept. No 81 continued



#### M. M.B. Tz. I, Sept. No 83 Sinai 1230, 21 z.



M.M.B. Tr. I, Sept. No 84 έφραίμ καρείας Sinai 1230, 21z. \_16H.**6**\_\_ うじゅうがょった # δα μαν τι νε την ψυ κην.

D EF α F αG F E E nws σε και α ξι αν bc b ab G a GF 5 Αβ 21/2 2/2 33 3 επ αι νε ω μεν E GF Ga FE D 17Aβ \_\_\_\_\_\_ 8Bγ こにゅる。 TONY YORD OU OU U TREP

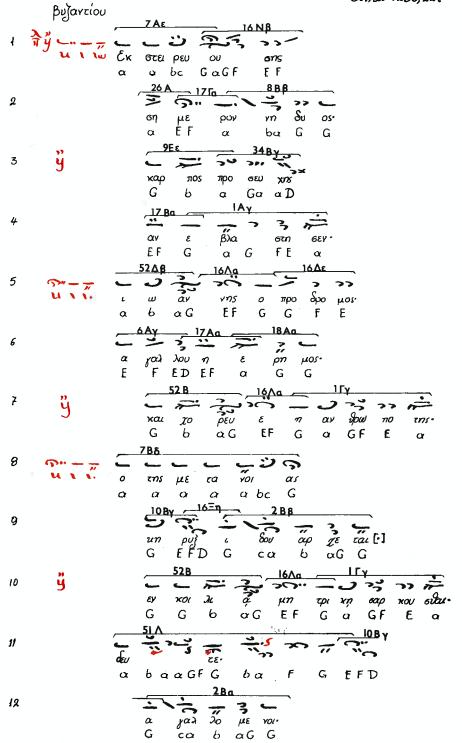
DEFAEF O BO γΕα 8Γβ Τρη μα των και παι δων G b a ba Ga a 6Δβ 17Αδ 18E 1078 44β 6 KOLI THE GUL BE OU SEE POU HE VOS D EF & G FE DEF E E FE την μα κα ρι αν ε κει νην a a a a FG G EFD <u>2Θβ</u> 33 3 3 49a 8 Kai a oi di ov que yny G ca b a GF Ga a 9 α α b α b G α

52Eβ 16Λα 16Δγ

ο κυ ρι ος ε δω κι 10 xυ ρι os ε δω κεν-αG EF G G F E 6Fa 17Aa 18Aa 11 KU PI OS OLG EI DE TO-FED EF  $\alpha$  G ws τω χυ ρι ψ ε δο ξέν G G a b a b G a b c 12 13

\_\_\_\_10Aa 1Δθ うつじっく 14 2 2 2/2 αλλ ον η γα πη 6ας θε GFEF D GFa 97. 17 Гу ドミヤッのラガ 15 ע א פאס דו צעשע עפּט עם υ KOU vn 6as Gaba EF a G G D G 9Δγ 8Ba 52Γβ ÿ« 16 LLY GOI TOUS GLY TLY baa ba Gab aG 5 Aa 20 12 20 30 3 17 ε δω ρη δα το. E GF Ga FE D 17Δγ ニードッラー ir q 18 cur α θλη τας γε [re] εθαι εοι D E FG α EF Gab α α 3A 1Ac 10Aa 19 THO UN DEU GOV HE YOS. bab Ga GFE F μεθ, ων 20 D G a dcb 21 کړ  $\lambda \omega y$ βα 6a vwv α ποι κι 6 6 bc Ьa G G α 22 μα κα ρι OV TE DOS UIT ε MEI YOUS G a b ab Ğ a G FE E Ь a 28 2ВВ から しじ ろ な 23 τους και συμπρε εβευ ταις αU 600 λα BO HE YOS. FG G G ca baG G a bc CI( a 6Гв 14Δ ÿ 24 30 καρ τε ευ στα θε ε· ψυ ×ε ဝုပ d G EFED Ga bc \_17Aa\_\_\_ 18AB\_\_\_ 25 7 Sus w 777 60Y. Ef a G G. 26 NU EDW In YOU n pas tuv a VO HL

#### M.M.B. Tz. I, Sept. No 88 Sinai 1230, 227



# M.M.B. Tr. I, Sept. No 88 continued

		52 Aβ
13	ÿ	EV τη εν δο ξψ αυ του ευλ λη τμει- G G b α G E E F G E F E D
	,	εν τη εν δο ξωρ αυ του 6υλ λη ψει-
		GGbaGEEFGE FED
		OI GIA E OP TOI
14		ことをプラッ
		οι φιλ ε ορ τοι
		D ET a Gao a
		160B 1FB 4Ea
15		12 2 - 0 33 33 - 4.5 L
		XO DEU OW HEY BO WY ZES.
		GF EF G α GF E EFG F G
		IDZA (IDAA) 4FB
16		O EV JEV VII TOUS.  FE D G G a b dcb  (EF D) IST 888
		O EV YEV YN TOIS.
		FED G G α b dcb
19	A 22	151 8 BB
17	դÿ	
		γυ ναι κων μει ζων υ παρ χων. 6 b d bc α ba G G
10	[ <u>:</u> : ]	9 Fn 12 EB
18	[ម៉ ]	
		μη <b>δ</b> ι α λι της πρε εβευ ων GG α b α Gα b G
19		15BB 8BB 77 -
17		
		ν περ των πι ετει τε πουν των· b b b c a ba G G
20	[ซู้"]	52Ao SAB
~~	[3]	תחי שצנ בי ביט ביט און אח און.
		b aG E GF Ga FE D
21	r g	TAG BAB
-	J	O TIENS EU DEU MEN.
		D FF a G G
		9Aa 10 4BB
22	ÿ	
	3	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$
		GabebabaaGGaeba
		27 <u>17Ba</u> 1Aa
23		27F 17Ba 1Aa
-		και το με γα ε   λε ος:
		καυ το με γα ε δε os:- α D EFG a G FE E

M.M.B. Ta. I, Sept. No. 90 ἀνατολίου Sinai 1230, 22 v. 33 φιλ α וסגע a' bc G F E 2 ษก λι τωγ  $\omega v$ το uau χη μα· G b aG G  $\alpha$ ca ÿ 3 שמה ערד  $\mathcal{Y}_{\mathcal{E}}$ μαρ ρα 70 tu G G Ь α bα Gab a 1Αδ μη ου μεν· υ μγοις τι ab G 6 a G FE b <u>\_15Αδ</u> \_\_\_\_\_55B γαρ τον 5 3 202 τn αν τι πα λον ε Gab b cba bc e d c b 7Α β 16la μει του σταν ρου 1EB 6 ra ματ ε πα τη 6ε• 9 6c G F F G G 6 G 17AE 7 F 6с ь a G FE E אמו צחי עו אחי a 3 :: 6a a 7 J. 22 20 / 7 pa sa a ge wi e see ga rw FE D EF Ga a be G F E ετε βα νω E E GF Ga 4A8 Sc "..." 8 D G a deb 15 AB 9 δυ6 ω πει 7 110 àυ . α DAOS. b b cb  $\alpha$   $c\alpha$ 6 aG G ÿ 10 pu etin δυ rou XLV *אשא* G or 6 a ba Ga XOU THS MEX YOU ONS upe **6**E ws. bc G F Ε G FE a 20 12 シッ TOUS EV TI GTEI XCU 177) bc ba G α Ь

13

M.M.B. Tr. 1, Sept. No 91 Sinai 1230, 22v.

κασίας μοναχής 4. ソッグのご Num Ge ov & Zou GO a bc G F E 2 Δa 2 ρα νοις χρι στον τον θε ον· EY OU  $\mathbb{T}$ a G G α ca Ь ÿ 3 γυμ φω νος κατ ε 600 Gcba bс Ьα 8AB アコンジャッ πL κη ρου και μνη είη ρος be b a be GF EF bα G a 1Ea nows a ole. 5 κλα 6 G a G FE E 28 6 tais joup un tow ous du 171 ous. FG G C<sub>t</sub>  $\alpha$ α  $\alpha$ 8 B y 7 गद्दा वर्णेश वका *φ*ρ0 μη ba G G bc d  $\alpha$ 7Aa 8 מל עסג סט παυ λών η a bc GF bc b 9 W μωνα ρα με E D G Gab aG <u>1∆a</u> 10 on her on ton etan pon. 16<u>0</u> G E и WOU TO HEY TUP OUK ε vap kn sas. a G . EF G  $\alpha$  b 12 ρων

EF

αG

ab

G

# M.M.B. Tr. 1, Sept. No 91 contenued

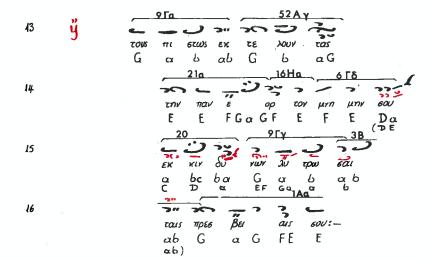
		— 53 Aβ — 2Aβ
13		> \\
		els'n με po τη τα μετ ε βαλές. DGG α α α α α β α GG
	2/3	9 Δε 7 Βα 16 Ζα 6 Γ Β  φω κας δε απ ε γε κρω σας
14	ÿĸ	2003 3 / 3 3
		be bG abe GF EF ED
	_	
15	719	17ZB 17Aa 9Ea
	, ,	τη εν γρι ετώ ναι τα δυ εει
16		1Aa 1Aa
		του α γι ου βα πτι φιατος.
		a a b a b G a G FEE
.~		28 16E
17	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	and we ex a prois yer rai wis-
		a a a a a FG G FE
	×	12 (ab aG FG a G
10		-1373 3 - 2Aa 3 -
		εν θε ως δια πρεγαεα.
		b d c b a ca b a G G b) 9 A 8 B a 24 A 8
19	Ÿ	6) 9Aa 8Ba 24A6
	3	μη οι οι πι πης ι κε εευ ου 602.
		G G a be b a ba Geba a
20		9Ba 8BB マルママンラママー
~		ם דומע פרשו אין אין מו ש
		απανετωντιμ κυ ρι ω Gbcb α bα G G
	<b>7</b> )	
21	ÿ	9Aa 8Fa
		υ περτων πι ετει εκ τε λουν των. GG a bab a ba Ga a
		G G a bc b a ba Ga a  788 761E 15a
22		TAβ 16   E 1   E α   Trny α ει εε βα ετον μνη μην εου: -
		την α ει εε βα ετον μνη μην εου:-
		a a c G E G b G a G F E E

	κυπριανού μα	
4	320 27	12 Aa 11 Bs 15 Ba Sinai 1230,22 y
1	g	Α να θει 6α ε αυ την
		A va ve ea $\epsilon$ av the $\epsilon$
2		カニービタンッツ
		παν το δυ να μω νευ μα.τι- α 6c d d a 6 α G
_	<b>&gt;&gt;</b>	9Fa 36B 17 [8 7[ 16M8 ]
3	y	κρα τυ νο με νη ως πρωτ α θλος του χρι ετου.
		G b a b a EF G a b c G F E E
4		17 Ha 28a 33 A
		την γε ω δη κα τα λει ψα σα στυρ γην· ΕΕ FG α cabaG α FG
		9Aa 38 7Ba 16Đa
5	ÿ	$\varepsilon$ ve du ow the ray ray $\varepsilon$
6		1ZB
•		rns au w vi ou ju ns.
	,	EFG bG o G F E E E
7	2	43 9 By 20
	00	ολ βι os υπ αρ ζα εα να λα μος· d c b a G b c b a bc b a G
8	ÿ	9Ba 36a 38 7Ba 16Ka
Ū	3	בו אי עו או אבו אי עו אב אמע אבו איני איני איני
		G bc b a a b a b G a b c G
9		30, - 10 - 33. 2
		προ α να παυ ον ταυ. EFG bG α G FEE
10	Э. » Я Ц	5Aa 17Ba 1By 10Aa
10	" g	ELE O SOV EN POR PLE YOU ENS ON W VI ON JOU NS.  E E E GF GO FE D D EF G OF E F
		E E G F G $\alpha$ F E D D E F G $\alpha$ G F E F
H		per w
		μεθ ων D D Gadeb
		13Ba 15BB 8 8 7Ba
12		$ \begin{array}{cccccccccccccccccccccccccccccccccccc$
		bdcbbca ba Gababc
13		16Ka 1Ea
	<u> </u>	υ περ των ψυ χων η μαν:-

M.M.B. Tr. I, Sept. No 95 Sinai 1250, 23 v.

X	ερμανού πατριάρ	KOU
U	, ,	10 Εβ 17ΑΥ 7Γ 16ΞΥ 10ΒΥ  + θλη τι κοις πα λαι εμα ει
4	ने यु	
	" 9	Alm Ti Marc was been also
		FF TO FF / O FFT
		FFD EF a a bc G EFD
		9ZY 17 TY 18A6 7Ba
2		こし テックッド シャック
		τον ε χύρον κατ ε πα τη σας
		G Ga b a FF a Gab abc
		150
3		θε κλα παμ μα κα ρι ετε. G EF G b G α G FE E F E
,		دست د د ش سر سرد مرز
		θε κλα παμ μα κα <i>ρ</i> ι 6εε·
		G EF G b G a G FE E F E
	_	17Δ5
4		17A8 1 <u>Aa</u>
		και τας του του μη κα vas·
		DEF a G F E E
	<b>~</b>	17 70 18 A8
5	ने य	トードン ラーデッド
	J	μαφ τυ ρι χων ευν τρι ψα εα.
		μαρ τυ ρι κων ευν τρι ψα εα. Ε Ε FG α EF α G G
		E L IQ Q EF Q G G
		9Δβ 8ΖΥ 52Ζ  να μω ριν ε ου γες b c b α b G α G
6		ディックラグ
		να. μυ ριν ε ου νες
		bc bab G aG
		174 44
7		17Hy 6Aq
7		30, 0 - 5 30 /- 3
		και χρι στώ ε νυμ φευ ύνος
		και χρι στών ε νυμι φεν ύνης Ε Ε F G Ε F E D
		17 p.a. 1 B.a.
В		17Ba 1Ba
		$\frac{1}{2}$ $\frac{1}$
		τωρ α μη υει ε ρα ετη:
		DEFG OGFE E
		52Eβ16Λα10H
9	<u></u>	一 で が ニ ブァッツ
	นเร	του που λου συν ο μι λε:
		a aG EF G G F E
		2Αβ
10.		
		RULL COU BLE GOT 100 OUT OF TAE
		$\mathcal{D}$ $G$ $G$ $\alpha$ $c\alpha$ $b$ $\alpha G$ $G$
	ä	
11	J	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$
	(k)	παρρη 61 ας τυ χου 6α.
		GabaGaaba
		$-9Z_V$ 17 $G = 8\Delta G$ 33A
12		75-15-30-23-3
		$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$
		G Ga b a EF a ba G af G
		GGabaffabaGafG

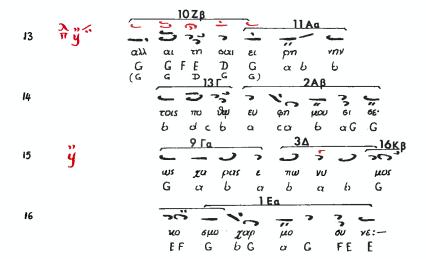
# M.M.B. Tz. I, Sept. No. 95 continued



M.M.B. Tr. I, Sept. No 97 Sinci 1230, 23v.

τοῦ αὐτοῦ (ί.ε. ἀνατολίου) ρον της α γνει ας σου Đα κα Σρη μα G ab cb Qί d d e c \_ <u>| 17 [a</u> μον ef av δραν φυ λα fa ca 2  $\mu\omega$ ΕF lo a O) ca b aG G ÿ 3 YULL GOT DE OU E HOT LLCI ζl GGa  $b c b \cdot \alpha b G$ συ γη παμ μα κα ρι σεε· G EF G b G α G FE E F G F G συ Ьс \_11**A**a\_\_\_\_ 5 μα τος μεν μαλ λος D G G a b b 13 Г 6 α σκη τι κοις πο νοις μα ρα να σαb b d c b a c a b a G G ψυ γην δε ω ραί W b a ba Gc 8 της χα EU MOD GI  $\alpha$ pi tos. c GEG 6G a G FEF a 9 vi ty in su a b cde d τφυ αρ G αb ρε G 2AB 10 кри ща ва. *GWS* 710 сb ca b aG G 11 a a 16Ka 1Ea 12 トンタッグ ay ye di nws πο a ßι w FF G bG a G FE E a bc G

M.M.B. Tr. I, Sept. No 97 continued



M.M.B. Tc.I, Sept.No 102 Sinai 1230,24v

ιωάνγου μογαχού 8Θβ 11Γβ 15Ea

UI OV TNS βρον TNS ba Gab b bc bG \_\_\_\_\_\_ 7Αδ \_\_\_\_ 10 Ζβ 2 \_ン、、しじのひゃ אשן סג עש ושל עש עם וג שע של עסי a b c b a a bc G G F E m you rns op vo so ge ass G b b bc a ba Ga a \_\_\_\_\_11E\_\_\_\_\_\_, \_\_\_\_15Βγ\_\_ 3 7A6 16AY και κη ρυ κα προ τι στον. bc G G F E G cr Zα 17Γ8

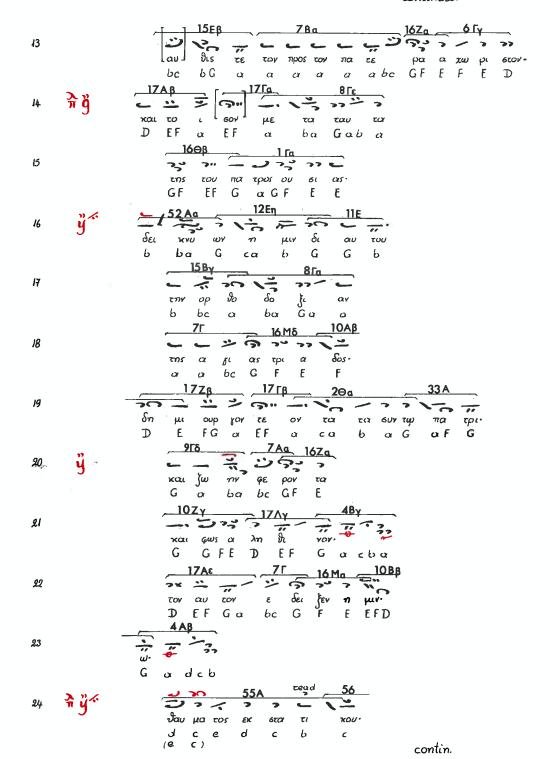
in stous Soy μα το FG α EF Gα 5 TAQ 167K DE OU a be (10∆a)10Za toy n ra m 7 HE YOY F E D ( ab **b** シッグ つつくき かきょ 8 עט אחר אנט אחר אנט ש אחר אנט ש b b d bc a ba Gab a - 25 25 25 7 10ZE LE DU TOUT JE VOS

A DO G F E DO Da TAα 16Θα 1Εδ

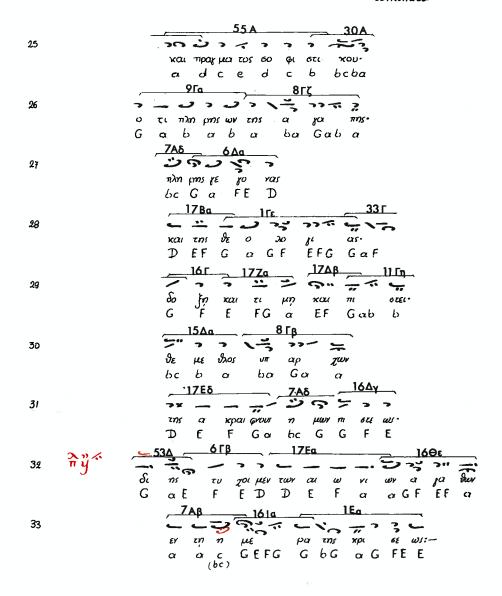
κα τα χρε ος εν εν μη οω μεν·
α bc CF EF G bG α G FE b 10 34 AB 11 Ty 13 By

au tos yap ai in ywr to del or a G a ca γαρ αλ λη κτον ε EV E QU TW' Gab b d c a b caba G G 12 MEV E tou 20 you. εν αρ χņ GN 6E G ab  $G_{\alpha}$  b ab G

### M.M.B. Tr. I, Sept. No 102 continued



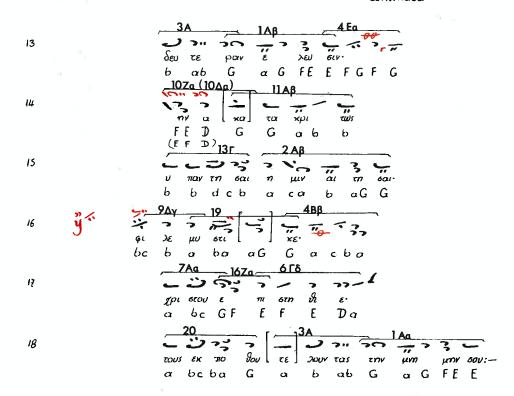
### M. M.B. Tr. I, Sept. No 102 continued



M.M.B. Tz. I, Sept. No 103 Sinai 1250, 25 z.

θεοφάνους τοῦ πρωτι	ουρόγου 12.Β
ı ÿ	10Δα 12Β 29Ββ
2	EF D G G ab G cb abc b b  15Aa 3A 1AB 4Fa  Tins De o so gl as tin éa ny fa.
•	bebaab ab GaGFEEFGFG
3	10Δα 11Δα 47  τον πιευ μα τι κον στρα τη γον.  EF D G G α b b b b cd c d
4	tov thr or kou he mr
5	Vε ψ wat v πο τα far τι b d c b a ca b a G G
6 <b>ÿ</b>	SEU 33
7	OI THE SECONDARY AS A COLOR OF E F E Da
8	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$
9 ÿ*	EX γης μεθι στα με rov- b c de d α b α G
10	xαι pns ουκ αφ ι στα με νον. b d c b q c a b α G G
u ÿ	αλ λα ζων τα και με νον τα G α b c b α b c G F E
12	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$

### M.M.B. Tr. I, Sept. No 103 continued



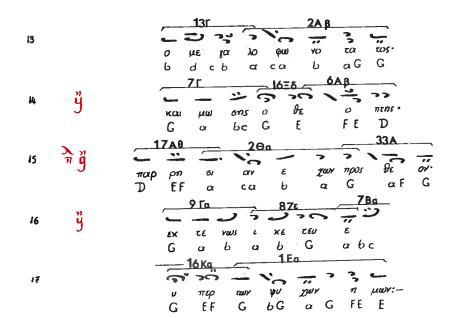
#### M.M.B. Te. I, Sept. No 104 Sinai 1250,25 v.

	/ 4 /	21	
τοῦ αὐτι	οῦ (i.e. <b>θεοφά</b> νο	τοῦ πρωτοθρόνου )	
	_	34Ba 97a 8Aa	
1	ŭ~	ショップラウィニョ	
=	3	DE O SO SE MAD DE VE.	
	10	9AB 14Za 13Ay	
2	ч	- (アーアンス・コーロン/デンド	
	Ÿ	μα θη τα η γα πη με νε του οω τη ρος	-
		Gabeba Gaade debb	
		34Aa 9Aa 19 4AE	
3			
_			
		13_C2AB	
4		し つ ろう ハーラ ニ	
		$\pi \in \rho_1$ sw $\int_{\mathcal{E}} \delta \hat{\mathcal{E}} \delta \hat{\mathcal{E}} \delta \hat{\mathcal{E}} \delta \hat{\mathcal{E}} \delta \hat{\mathcal{E}}$	
		bdebaeabaGG	
		9 FR 9Z8	
5		2.23	
,		23 0 0 m 4 m 7	
		α πο βλα βης παν τοι ας·	
	50	G a b a Ga b a	
		3A1Aa	
6		3 - 3 - 3 - 3	
		O EC 600 E 6HEV TICK HYL OY:-	
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M. M.B. Tr. I, Sept. No. 106 Sinci 1230, 25 v.

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## M.M.B. Tr. I, Sept. No. 106 continued



M.M.B. Tr. I, Sept. No 110 Sinai 1230, 26 r.

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M.M.B. Tz. I, Sept. No 111 Sinai 1230, 26v.

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TABLES OF THE FORMULAS
WITH THEIR OCCURRENCES

_						FOI	RMU	$_{ullet}^{L}$
A	α β γ δ ε <b>ξ</b>	δι G	a G	vou FE	Joe F. F. Ja J. b. J. F.			
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A'α' 11,7. 11,14. 12,5. 13,3. 21,18. 22,11. 23,11. 24,11. 27,11.28,12.
     33,5. 33,17. 38,2. 38,11. 44,4. 51,10. 51,12. 51,16. 56,5. 56,13.
     56,23. 57,8. 64,13. 65,13.69,17. 83,6. 84,9. 84,22. 84,26. 88,23.
     91,16. 95,16. 103,18. 104,6.
  β' 3,11. 13,6. 33,10. 49,7. 64,11. 65,9. 66,8. 103,2. 103,13. 24,13.
  γ' 36,3. 37,3. 49,9. 65,5. 88,4.
  δ' 37,6. 90,4.
  \varepsilon 21,9. 68,9. 84,19.
  ζ' 29,13. 50,2.
  n' 56,19.
B'α' 90,13. 95,8. 111,2. 111,5.
  β' 34,3. 38,6. 48,10.
  Y 92,10.
  δ' 21,7
\Gamma'\alpha' 14.2. 17.11. 29.17. 49.17. 54.4. 69.7. 79.8. 81.18.102.15.
    ' 54,23. 67,5. 88,15.
  \gamma 88,7. 88,10.
  δ' 34,11.
  ε' 102,28.
  ζ' 36,7.
\Delta'\alpha'' 9,2. 23,7. 67,3. 91,10. 95,4.
  β' 12,3. 24,9. 78,6.
  γ' 23,4. 33,3. 66,5.
  δ' 16,3.
  ε' 79,20.
  ζ' 51,2. 111,3.
 η΄ 12,6.
 9 84,14.
E'\alpha' 3,15. 4,5. 4,12. 9,9. 12,12. 13,11. 16,10. 17,4. 17,9. 18,9. 18,14.
     21,3. 24,6. 24,21.34,6. 34,16. 35,7. 35,20. 36,11. 37,17. 44,19.
     48,13. 54,29. 55,15. 66,13. 68,6. 68,18. 69,5. 72,18. 78,16. 79,18.
     81,6. 91,5. 91,22. 92,13. 97,12. 97,16. 102,33. 103,8. 106,17. 111,9
     111,11.
  β' 3,3. 12,8. 16,6. 72,9. 90,6, 92,9. 95,3. 97,4.
  γ' 49,5. 68,13. 83,2.
  δ' 54,11. 79,9. 102,10.
  ε' 3,5. 29,8. 66,2. 84,13. 97,8.
  ζ' 110,4.
  η΄ 3,8. 17,2.
Z'α'14,12. 24,16. 35,12. 44,11. 55,7. 110,10.
  β' 11,3. 18,5. 33,14. 92,6.
  γ' 72,3
H'α' 50,9. 79,22.
  B' 35,1.
    49,14
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A'α' 12,9.14,4.16,5.18,7.24,4.28,2.28,7.29,10.54,7.55,13.69,15.72,15.
    79,6.90,2.90,9.91,18.97,2.97,6.103,5.110,9.35,3.110,6.

β' 3,13.11,9.11,12.18,11.21,5.24,19.27,4.29,15.36,5.38,4.44,7.49,3.
    54,2.57,6.65,2.68,14.78,14.79,12.91,13.95,10.97,10.97,14.103,10.
    103,15.104,4.106,3.106,13.110,2.
    γ' 49,15.

Β'α' 16,1.23,8.24,17.29,5.35,16.44,13.69,15.88,12.
    β' 23,5.68,14.84,23.88,9.

Γ' 36,5.

Δ'α' 27,6.50,7.66,7.68,2.78,8.91,2.102,11.110,8.
    β' 18,8.35,14.35,18.37,12.65,7.68,7.
    γ' 24,10.

Ε'α' 12,7.
    β' 34,4.81,8.81,15.

Ζ'α' 28,3.
    β' 22,5.
    γ' 56,21.
    δ' 56,15.
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θ'α' 92,4.34,5.81,12.102,19.106,7.106,15. β' 3,4.72,17.84,8. γ' 38,9.38,10. Ι'α' 36,10. β'12,4.

H'a' 4,8. β' 17,6.

FORMULA No. 3

A	μη	τρα a	τευς b	τη ab	∂E G	οτητι
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A' 3,11.12,5.13,3.13,6.24,11.24,13.28,12.29,12/13.33,17.36,3.37,6.38,2. 38,5/6.44,4.49,9.51,10.51,12.51,16.56,5.56,13.56,19.56,23.57,8.64,11.65,5.65,9.65,13.66,8.68,9.83,6.84,9.84,19.84,22.90,4.90,13.91,16.103,2. 103,13.103,18.104,6.

B' 11,13/14.48,10.95,15/16.111,1/2 Γ' 12,8.111,9. Δ' 97,15. Ε' 16,6.21,3.

Z' 68,18.

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β΄, δ΄. ε΄. β΄α΄, β΄. Δ΄α΄, Ε΄α΄, β΄,	A'α' 14,7.  β' 16,4.21,10.29,9.36,8.66,3.68,10.90,8.102, 23.  γ' 84,20.92,11.  δ' 44,8.  ε' 104,3.  B'α' 50,3.  β' 54,8.54,16.56,8.56,16.64,8.68,8.88,22.103,6.103,16.  γ' 81,9.102,21.  δ' 12,10.13,9.68,17.79,17.  Γ'α' 18,10.  β' 11,11.22,7.35,2.49,2.65,6.72,10.88,16.  γ' 110,5.  Δ'α' 66,9.  β' 55,10.  Ε'α' 3,3.18,5.24,9.49,1.72,9.78,2.78,6.88,15.97,4.102,6.103,2.103,13.  β' 17,5.28,1.35,13.51,13.72,14.  γ' 4.6.11.10.													

FORMULA No. 5

Αα	πα Ε	τερ G F	ッ G a	συ FE	υ ε Σ
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- Αα 16,7.21,8.22,2.23,2.38,7.44,17.48,12.51,11.56,12.64,12.65,4.68,4.
  - 69,3.78,5.78,10.84,17.90,7.92,10.
  - β 21,1.23,9.69,1.72,12.83,4.84,3.88,20.
- Bα 18,3.55,4.72,12.
  - β 48,12.56,12.64,12.68,4.69,3.
- γ 90,11.
- .α 111,10.
- в 111,3.
- γ 106,10.
- Δ 68,15.

FORMULA No. 6

Αα	иUV E	δυ FE	<b>3</b> νων D	
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- Αα 21,17.28,6.48,4.50,2.95,7.
- в 33,5.33,6.34,10.36,1.37,2.49,10.49,11.64,4.64,9.79,3.88,13.106,14.
- γ 9,7.21,13.28,11.66,2.88,6.
- Bα 49,8.69,10.69,12. β) 72,8
- Γα 50,5.48,10.50,8.64,10.67,6.84,11.91,9.
- β 14,5.34,9.37,15.37,16.49,17.54,9.56,9.56,17.72,5.84,24.91,14.97,11. 102,32.106,4.111,4.
- γ 11,6.17,8.27,10.102,13
- δ) 95,14.103,7.103,17.
- Δα 79,5.79,13.102,27
- β) 84,6 e

E 49,13.

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- A'α' 3,3.3,15.4,9.9,2.9,9.11,2.11,3.12,12.13,11.14,12.17,2.17,8.18,9. 21,12.21,15.23,6.24,16.28,8.29,7.33,8.34,15.35,12.36,11.44,10.48,13. 54,11.55,7.55,15.56,17.66,11.66,13.68,6.72,3.72,9.72,18.78,16.79,13. 79,18.81,2.81,6.83,2.91,4.91,8.97,4.97,12.102,6.102,10.102,20.103,8. 103,17.106,2.110,4.
  - β' 3,5.4,4.4,11.17,4.17,9.24,5.33,13.34,6.35,6.37,17.49,4.54,28.66,2.68,13.90,6.91,22.97,8.102,33
  - γ' 16,1.18,10.35,8.65,6.
  - 6' 22,3.48,7.51,6.64,9.66,6.81,14.102,2.102,4.102,27.102,31.106,5.110,1.111,6.111,7.
  - ε' 65,1.72,14.88,1.
- B'α' 3,7/8.14,5.16,9/10.18,4.18,13.24,20.27,9/10.44,18/19.48,8.54,9.56,9. 8412/13.91,14.92,5.92,8.92,12/13.95,2/3.97,11.102,13.103,7.106,16/17 111,10/11.
  - f' 110,10.
  - γ' 36,4.37,4.
  - 5' 14,3.22,10/11.35,10.35,13.44,16/17.49,1.68,14.78,1.78,3.79,19.81,7.81,11.88,8.
- F. 4,6.9,4.11,10.14,6.18,12.21,17.27,3.28,1.28,5.28,10.29,4.34,8.49,10.
  50,8.54,17.54,18.55,2.55,4.56,6.56,14.67,9.72,13.78,10.78,12.81,10.
  81,13.90,1.90,7.90,11.91,1.92,3.95,1.102,9.102,18.102,22.103,11.
  106,9.106,11.106,14.

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A'a' 13,1.104,1.
  β' 29,7.29,12.91,4.
B'α' 14,9.16,2.54,2.81,16.84,16.91,3.91,19.97,7.
  8' 3,6.9,3.21,14.22,8.24,2.33,12.44,9.44,15.72,6.72,11.81,4.88,2.88,17.
     88,19.91,20.
  γ' 3,9.11,5.13,8.14,1024,18.38,8.48,6.54,26.56,11.84,4.84,21.91,7.
     111,8.
Γ'α' 29,6.34,14.51,16.54,27.79,7.79,15.90,10.91,21.102,17.106,8.110,3.
  β' 34,2.54,25.84,5.102,3.102,30.
 γ' 22,9.56,22.
  δ' 37,10.
  ε' 3,10.17,3.35,5.37,5.102,14.
  ζ' 3,14.3,7.13,2.13,5.51,9.90,3.92,12.102,8.102,26.
Δ'α' 95,12.35,9.
β' 22,9.56,22.81,16.
  γ' 56,7.
E'a' 21,11.44,2/3.103,9.
  β' 3,2.92,2.
  y' 102,11.
Z'a' 17,1.28,4.68,12.
  β' 34,13.
 γ' 83,3.95,6.102,12.
  δ' 21,6.78,15.
 ε' 24,20.84,12.97,3.106.16.
  ζ' 38,10.
H'α' 17,9.
  β' 95,11.
0'a' 11,1.14,1.54,12.55,1.81,1.
  β' 17,1.24,1.102,1.
 γ' 12,11.13,10.
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-222-FORMULA No. 9

Αα β	жаl G	υ a	πο bc	οτα b	σις a
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n		Ga	b	a	
		Ga	b	a	
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Α'α' 3,5.3,7.3,14.4,4.12,10.13,9.14,9.16,2.17,9.23,9.29,16.33,13.
     36,6.37,10.37,13/14.44,8.49,4.56,12.56,16.68,8.68,17.81,9.81,16.
     81,17.88,22.90,6.91,4.91,19.91,21.92,5.104,3.110,3.
  β' 17,7.22,10.24,3.65,8.104,2.110,7.
  \gamma' 4,9.11,10.16,6.68,12.78,15.97,3.103,11.
  δ' 14,5.27,9.54,3.
B'\alpha' 21,6.23,6.24,5.28,4.29,6.54,8.54,21.54,26.91,3.91,20.92,8.97,7.
     110,10.
  ß' 55,3.55,6.
  y' 28,8.66,11.92,7.
  δ' 27,3.
\Gamma'\alpha' 4,10.9,4.11,2.21,12.21,15.24,13.29,4.29,7.51,9.54,16.54,27.56,8.
     79,5.81,1.84,12.84,22.90,3.90,10.95,13.97,15.102,26.106,16.
  β' 104,5.
  γ' 90,12.95,15.
  δ' 24,20.33,7.33,8.79,13.102,20.
  ε' 3,10.18,3.18,9.22,6.29,12.29,17.38,5.44,10.
  ζ' 50,6.81,5.84,26.
    11,13.28,3.55,13.55,14.57,7.66,8.72,7.78,9.88,18.95,11.
  ð° 34,5.
  u' 102,2.
Δ'α' 18,12.
  β',95,6.
  γ' 48,7.56,22.68,15.84,16.91,8.103,16.
  δ' 65,3.
  ε' 14,11.91,14.97,11.
E'\alpha' 3,3.13,2.13,5.22,9.34,14.36,2.54,2.54,25.
                                                 79,7.79,15.84,5.
     91,15.92,3.106,8.
  β' 110,9.
  γ' 102,12.
  5 18,8,34,2,37,12.51,4.66,5.67,4.69,6.69,8
  ε' 35,17.67,2.88,3.
  ζ' 23,3.54,22.
Z'a' 13,1.104,1.
  β' 4,3.56,4.
  γ' 33,16.35,9.51,5.56,7.72,2.84,15.95,2.95,12.
  δ' 56,4.57,7.66,8.104,5.
  ε' 57.5.
  54,10.83,5.103,12.
  n' 14,1.24,15.38,2.
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Ααβ	δυνα Ε	μις· F	συν D	γ α G E K FGa	ναρχος
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Ια	ب پئی ک <del>ا</del>	τον b c	tns a	ог в . d	κουμενης

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A'\alpha' 3,5/6.11,8.16,3/4.21,9/10.22,4.23,8.27,3/4.29,8/9.36,7/8.66,2/3.
     67,1/2.68,9/10.72,16/17.78,12/13.84,13/14.84,14/15.84,19/20.
     90,7/8.92,10/11.97,8/9.106,2/3.106,11/12.
  B' 102,18/19.
 Y' 106,10/11.
B'a' 35,1/2,64,7/8,110,4/5.
  β' 3,8/9.12,6/7.16,1.17,2/3.29,13/14.34,11.38,1/2.50,2/3.72,3/4.
     102,22/23.
  γ' 34,4.35,8/9.56,6/7.65,6.81,7/8.81,11/12.84,7/8.88,9.88,11/12.
     95,1/2.
  8' 66,6/7.81,14/15.
  ε' 33,2.
  ζ' 48,11.68,16.
\Gamma'\alpha' 48,4/5.51,2/3.69,4/5.79,4/5.
  β' 3,11/12.33,10/11.54,17/18.95,3/4.
  Y' 35,10/11.
Δ'α' 3,4.4,7*.11,11.17,6.24,10*.27,1.28,2*.29,1.35,14*.44,1.44,5/6*.
     49,2.51,14.72,10*.72,15*.78,7.88,16*.97,5.102,7*.103,1.103,3.
     103,14*.110,1*.
  β' 78,3.
E'α' 13,4.24,7.24,12.38,3.54,5.54,19.64,6.65,1.67,4.
  β' 12,6.78,1.95,1.106,2
  γ' 23,1.33,1.37,1.38,1.
  δ 23,10.33,3.72,13.
Z'\alpha' 4,7.18,6.24,10.28,2.35,14.72,10.72,15.88,16.102,7.103,14.
  β' 14,3.14,7.18,10.21,4/5.22,6/7.29,4/5.36,4.44,5/6.51,3/4.52,2/3.
     56,14/15.90,1/2.91,1/2.97,13.102,2/3.110,1.
  γ' 9,8.18,12/13.48,7/8.49,15.102,21.103,11/12.
  δ΄ 22,1.22,11.48,3.79,4.84,6.
  € 102,9.
H'
     36,1.56,20/21.91,12/13.95,9/10.
0.
     66,1.
I'a' 103,4.
  β' 54,6.
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<sup>\*</sup> The asterisk indicates a variant written with red ink above the regular formula. These variants are included in the number of occurrences.

FORMULA No. 11

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Ααβ	συνα	Jap G	XOS ab	م ∜ و ئ و ظ أ				<b>Γ</b> α β	ε	γε Gab Gab Gab	م : إ م إ م عزا	
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β Υ Β <b>΄</b> α β	22,4. 3,9.1	102,7 1,8.4 38,9.	4,6.	,14.1 54,12	10,1	14.78,	13.9	7,5.9	7,13.	103,	3.106	,12.

- γ 16,1. δ' 3,1.11,1.38,3.54,5.55,1.65,12. ε' 24,7.56,1.92,1. ζ' 3,13.11,5. η' 102,12.

- Γ'α' 14,3.17,3. β' 24,1.14,9.17,1.102,1. γ' 102,11.54,2. δ' 38,8.

  - ε' 54,1.

  - 54,1. 5'35,4. n'102,29. θ'37,4. υ'90,5.
- Δ' 48,5.65,8.
- 4,1.24,18.38,4.102,3.102,16 Z'34,13. H'57,1.

FORMULA No. 12

Ααβ	θαυ	μα G	στος b	ε a	G a	θεος <b>ੌ</b>
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A'a' 3,1.13,4.24,7.24,12.38,3.54,5.54,19.56,1.57,1.92,1.  
    ß' 36,4/5.  
    \gamma' 55,12.
```

B' 27,1.11,11.33,11.97,9.103,1.110,5.

 $\Gamma'\alpha'$  4,7.12,1.44,1.48,5.66,7.79,5.

β' 38,2.57,5. γ' 16,9.

δ' 3,12.17,11.

Δ' 44,16.

E'a' 54,22.24,15,68,3.

β' 4,3.88,18.

γ' 29,11.

8' 12,11.13,10.

ε' 44,3.

ζ' 14,1. η' 102,16.

Ααβ	<b>თ</b> ის c	Xpn d c	>> μα b	مال مال
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A'α' 97,1.
β' 55,9.
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B'α' 29,10,24,2.13,7.36,9.44,7.55,10.92,12.

16,5.18,7.18,11.28,7.29,15.38,4.54,2.65,7.91,18.97,6.97,14.103,5. 103,10.103,15.104,4.106,7.106,13.110,2.110,6.

Δ'α' 29,3.37,8.37,9.54,14.54,20. β' 55,11.68,11.

E'α' 16,5.13,7.27,2.

γ' 11,4. δ' 17,10.17,10.29,2/3. ε' 56,2.

γ' 3,12.56,3.66,4.104,2.

β' 49,3.11,9.11,12.78,8.

γ' 102,11.

γ' 54,24.57,4.

β'4,2.

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Α'α' 29,3.27,8.37,8.37,9.37,11.54,14.54,24.55,11.68,11.

β' 27,2. γ' 3,2.92,2. δ' 66,4.

В' 56,2.

r' 56,3.

Δ' 11,6.37,15.84,24.106,4.

E \* 27,7.

β' 11,4.

I 97,1.

FORMULA No. 15

A α β Υ δ	9	ထိန b b မှ မော် မော် မော် မော် မော် မော် မော် မော်	102 6 16186 18 6	no a na no a	ξα
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Α'α' 54,24.68,11.
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B'α' 56,1/2.24,7/8.92,1/2.
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24,18.56,11.72,11.88,17.91,7.102,8.

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Δ'α' 17,3.84,2.102,30.103,2.
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E'α' 18,2.24,1.102,1. β' 102,13

γ' 65,2.

β' 3,13.4,2.29,10.36,9.44,7.54,7.78,14.90,9.97,10.

γ΄, 97,1. δ΄ 54,12/13.54,14/15.90,5.

ε' 65,10.

<sup>6&#</sup>x27;3,6.13,8.17,1.21,4.22,8.35,5.38,8.44,9.44,15.51,15.81,4.88,19.92,12.

γ' 11,5.14,10.24,2.33,12.37,5.84,21.102,3.102,17.

<sup>8 3,9.21,11.48,6</sup> 

ε' 12,1.12,2.14,7.44,1.48,9.49,6.84,23.

ζ' 66,7.

n' 14,4.

β' 48,5.

γ′ 4,1.

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A'α' 49,12.
  β' 69,11.69,13.
  γ' 48,2.48,4.69,9.
B'α' 23,1.48,9.50,4.79,2.
β' 35,13.49,16.79,19.
  γ' 51,13.
Γ' 102,29.
Δ'α' 11,8.22,4.23,8.
  β' 9,1.9,3.48,1.50,8.51,7
  γ' 11,8.22,3.23,8.56,20.78,4.84,10.91,11.102,4.102,31.106,5.111,7.22,1.
  6 66,6.81,14.
  ε' 17,5.33,4.51,6.88,5.111,6,
  ζ' 35,10.49,1.78,2.
E' 64,6.91,17.
Z'a' 14,5.11,2.21,12.21,15.28,8.54,9.91,8.91,14.102,13,102,20.103,7.
     103,17.
  β' 33,8.66,11.81,2.
  γ΄ 106,2.
δ΄ 48,8.
  ε 4.9.
  ζ' 102, 6.
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H'\alpha'' 9,6/7.18,3.23,9.34,8/9.34,9.37,16.56,12.67,6.68,15.72,5.84,2/3.
     95,14.
  ß' 9,5.
  γ' 9,2.79,13.
  δ' 66,1.84,1.
ε' 72,16
0 'a' 3,3.3,8.11,3.12,12.13,11.14,12.17,2.18,4/5.18,9.18,13/14.23,6/7
     24,16.35,12.44,10/11.44,19.48,13.54,11.55,7.66,13.72,9.72,18.79,18.
     81,6.83,2.91,4/5.92,5/6.102,10.
  β' 12,3.16,3.17,11.23,4.54,22/23.66,5.67,3.88,15.102,15.
  γ' 44,13.
  δ' 33,7.38,9.51,4.
  ε' 102,32,72,17.
  ζ' 34,5.
I'\alpha' 3,5.4,4/5.4,11/12.33,13/14.34,6.35,6/7.37,17.66,2.68,13.90,6.102,33.
  β' 16,6.21,3.68,18.
  γ' 79,9.
  δ 34,7.
  ε' 17,4.17,9.24,5/6.49,4/5.54,28/29.91,22.97,8.110,10.
  ζ' 34,10.
K'a' 3,15.9,9.16,10.24,21.29,7/8.34,15/16.36,11.55,16.68,6.72,3.78,16.
     84.13.92.8/9.92.13.95.3.97.4.97.12.103.8.106.17.110.4.111.11.
  ß' 12,8.97,15/16.111,9.
 y' 69,5.
Λ'α' 14,2.17,5.24,9.29,17.35,20.36,6/7.54,4.54,22.67,5.81,18.83,5.84,10.
     88,5.88,7.88,10.91,9/10.91,11.91,12.95,9.
  B' 33,4.79,8.79,16.
M'a' 28,5.44,17.55,4.78,10.90,11.102,22.
 β' 9.4.
 γ' 81,13.
 δ' 27,3.28,1.78,12.90,7.102,18.106,11.
 ε' 14,6.54,18.67,9.72,13.
  ζ' 28,10.106,9.
 n' 81,10.
 ð' 92,3.
N'a' 65,1.72,14.
  в' 88,1.
 γ' 35,3.35,15.
Ξ'α' 4,6.11,10.
  β' 17,8.27,10.56,9.56,17.97,11.
 γ' 64,9.
 δ' 21,17.34,8.49,10.106,14.
ε' 34,10.
 ζ' 16,1.35,8.56,6.65,6.95,1.
  η. 81,7.81,11.88,8.
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Α'α' 16,8.21,2.35,11.50,5.55,5.68,16.79,14.84,11.84,25,88,6.88,14.88,21.
 β' 72,6.84,4.102,14.
 γ' 21, 13.22, 1.28, 6.33, 6.49, 10.84, 1.
 δ 79,3.12,6.84,6.95,4.
 ε' 9,8.28,11.54,18.90,7.102,22.
  ζ' 95,1.
 n' 14,5.35,1.49,1.49,15.50,9.65,4.
 9' 18,4.48,2.66,2.67,7.69,2.69,10.69,12.81,10.106,15.
 u' 9,2.49,8.64,10.79,2.
 и' 48,10.111,1.
B'a' 11,7.21,7.21,9.21,18.22,11.23,11.27,11.33,3.33,5.33,10.34,3.37,3
     38,11.48,4.49,7.49,14.50,2.51,2.64,13.69,7.69,17.78,6.88,4.84,26.
     88,23.92,10.95,8.102,28.111,3.111,5. 48,2
 β' 69,9.69,11.69,13.
 y' 49,17.
\Gamma'\alpha' 9,3.34,13.72,6.84,4.88,2.95,12.97,2.102,14.111,2.
  β' 35,3,35,9.27,5.56,7.79,19.81,7.102,19.
 γ' 9,5.14,8.44,18.51,5.72,2.84,15.95,2.95,5.
 δ' 22,3.38,10.92,3.102,5.106,5.111,6.111,7.
Δ'α' 4,6.23,3.54,10.56,6.56,14.91,15.103,12.
 β' 66,12.79,17.102,29.
 \gamma 23,10.84,18.
 δ' 28,9.
 ε' 68,5.
E'a' 56,10.56,18.72,13.81,13.102,32.
  β' 18,13.78,1.78,3.
 Y' 78,11.
 6' 9,8.102,31.106,2.
  ε' 48,8.
Z'\alpha' 9,3.9,5.28,9.44,18.66,12.95,5.102,5.102,29.111,8.
  β' 23,3.23,10.54,10.68,5.84,18.91,15.102,19.103,12.
Η'α' 92,4.24,14.
  β' 12,4.35,4.106,6.
  Y' 9,7.95,7.
 δ' 34,7.
  ε' 49,12.88,13.
θ'α' 11,2.21,16.
 β' 37,2.48,3.64,4.
I'
     67,8.
Κ'α' 33,15.
 B' 111,4.
Λ'α' 12,9.24,17.44,12.69,14.
  B' 79,20.
 γ' 102,21.
```

### FORMULA NO. 18.

A	αβ	ευ	λο a	<b>3</b> γη G	هنل ه څو ل	
	Υ					
	δ			ين Gab	in va via ja	
	ε				<b>7:</b> a	
	ζ			<b>7.</b> / G a	<b>J</b> a	
В	α	ϑαυμα	χ σι a	ων G		
	β				G	ل G
	γ				ј G Б	G a

Γ.	αβ	βελι	J) & a	εν G	αυτώ <b>΄</b> bG	<b>:</b> a
Δ	α β Υ δ	τε	λουν a	TE SE SE SE	) a	G E
Е		μαλ	λον a	ο δε G		

 $A'\alpha'$  9,5.50,5.51,5.84,1.88,6.

β' 14,8.21,2.84,15.84,25.88,21.95,5.

γ' 44,18.

δ΄ 88,14.

ε' 78,11.95,2.

ζ' 72,2.

B'α' 33,15.79,14.

β' 16,8.55,5.68,16.

γ' 35,11

Γ'α' 56,10.21,16.67,7. β' 56,18.

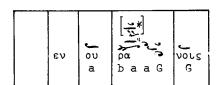
Δ'α' 21,13.22,1.

β' 28,6.81,3. γ' 33,6.

δ' 37,2.64,4.49,10.

E' 48,3.79,3.84,6

## FORMULA NO. 19



12,10.13,9.29,16\*37,14\*44,8.54,8\* 54,16\*54,21.56,8.56,16\*68,8.68,17\* 81,9\$88,22.103,16.104,3

#### FORMULA NO. 20

δι a	υ α bc	της ba	<b>∂</b> ε G	οτοκου
---------	--------------	-----------	-----------------	--------

4,10.54,1.90,12.92,7.95,15.103,18.

FORMULA NO. 21

	ει E	ρη FGa	νη G	
--	---------	-----------	---------	--

9,6.34,8.34,9.37,16.67,6.72,5.95,14.

FORMULA NO22

αι

٦

d

ω

×

ψου

dcbc

bcbc

να

με Σζ

ЪG

νον

а

r	наь	αν Gc	)) § o	πα b	ο νηγυριζει a
---	-----	----------	--------	---------	---------------------

A'a' 24,19.27,4.35,18.

β' 55,13.

γ' 78,9.91,3. δ' 91,19.

B'a' 16,2.81,16.97,7.

β' 36,5.

γ' 66,12.

28,3.

d A' 12,2.24,8.44,2.103,4.

τον

b

αν

εις

a

και

đ

Α

В

B' 68,7.

## FORMULA NO. 25

A	με	μνη E	με FG	VOL E	
В		την	μνη F G	<b>3</b> μην Γ	ος Ε

FORMULA NO. 23

*!*: σι ε b cd

13,8.14,4.22,8.28,7.55,10.57,2.78,14. A' 81,4.

49,13.51,1.79,1.83,1. В 50,1.

#### FORMULA NO. 24

A α β γ δ	της	/ c / c / c	βετ ba ba ba	ل مال
B α β Υ		φα c ./ c	(Se a fo Ca	Ja

#### FORMULA NO. 26

A	ευ a	J₁\ λο α	γn E	σον
В	φως	προσ a	ε E	λαμβανες

A' 4,6.56,6.56,14.79,19.81,7. 88,2.106,5.111,6.111,7.

B' 14,8.34,13.35,3

			و	×cc
Αα		α	γι	φ
i		G	a	D
β	,		a	æ× D
В		Joo	) ω a	ρευς D Ε
Г	яє	<del>с</del> жλει a	<b>υ</b> σμε a	>× νην D

Α΄α΄ 9,1.48,1.51,1.79,1.83,1.

β′ 50,1.

В • 21,1.67,1.

Γ, 35,16.38,11.48,2.88,23.111,1.

#### FORMULA NO. 28

	5	3U		
	'n	νω	με	νος
	a	FG	G	

14,7.21,4.22,6.23,5.35,19.44,5. 48,9.49,16.50,4.51,3.64,6.69,2 79,2.84,7.84,23.91,6. 91,17.

#### FORMULA NO- 29

A α β Υ	εγнαι	νι G	ζον a	1) pu c	က ရောက သုံးမ	
Βαβ		G	9 5 P	δι abc	b b	), o b ); b
r		G	 γαρ a	υ ρι bc	ςης b	

			_	3	<del></del>
Δ	φυ	σε	ωs	. n	μων
	G	ab	С	b	С

A'α' 48,5.54,1.

β′ 18,2.

γ, 4,1.

Β'α' 24,12. β ′

103,1. 27,1.

Γ,Υ, 33,11.

Δ 37,7.79,10.

#### FORMULA NO. 30

A	α	γα b	θης bcba
Вα		πα	τρος bcba
β		a \c	рсва

11,1.29,3.37,8.37,9.54,1. A'α' 65,12.90,5.102,25.54,20.

Β′α′ 4,2.54,24.57,4. 13,4.

#### FORMULA NO. 31

δευ	<b>3</b> τε	
Ъ	a	
 90,1	.91,1	

### FORMULA NO. 32

A		∂e E	ου EFED
В	αν	<del>მ</del> ρω G	TOUS EFED

Α' 21,7.22,1.78,4.79,8.79,16.

79,20.

В′ 35,19.69,2.

A		του G	θε aF	ου G	
В	ανοι	γον G	aF	τάι G	
г	θεολογ	cuas G	aF	\∞0	ξņ

A' 3,4.12,9.21,11.21,16.27,7.33,15. 34,13.35, 4.35,9.37,11.56,10. 67,7.79,14.92,4.95,12.102,19. 106,6.106,7.106,15.

B' 36,1.

Г° 102,28)29

#### FORMULA NO. 34

Ααβ		b	ο εις a	∌ S G	a	οιαν
'	ļ				a	
Вα	η	των b	λει a	φα Ga	νων	
Υ					a a aD	
, ,					aD	
Γα			жаг ba	<b>9</b> 0 G		
β				Ga	\$ <del>=</del>	
Υ				Ga.	=	
δ				G G	Ja b ad	
Δα			αυ ba	τη G		

A'α' 3,13.11,5.18,3.22,5.24,13.56,4 68,12.104,3. β' 18,8.110,9.

γ° 22,10.24,3.37,12.81,5.84,26. 17,7.

B'α' 13,1.104,1.

β' 33,16.35,17.50,6.55,3.55,6. 55,8.57,3.67,2.110,7.

γ' 88,3.

Γ'α' 29,17.

β' 29,2.56,2.

γ' 17,10.

δ 17,10

Δ'α' 90,5.

β' 102,11.

### FORMULA NO. 35

	٧.3	777
αυλου	πυ	pos
E	GF	G

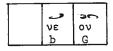
27,8.35,15.

### FORMULA NO. 36

α	χο	ρευ	ων
	a	b	a
β			a

α' 12,10.13,9.14,2.22,3.55,2. 92,8. β' 92,3.

#### FORMULA NO. 37



18,1.37,7.79,10.97,1.

	των	πο	ρευ	θεν	των
	100	a	bG	a	

18,4.92,5.92,8.97,11.110,10

#### FORMULA NO. 43

ολ	βι	05	οπαρχων	92,7
d	С	Ъа	G	

FORMULA NO. 39

αβ	on ED	με CDE	Joe Jie			
Υ	<b>)</b> α Ε	<b>)</b> \€ E	στο D	<b>λ</b> ε C	χρι DE	<b>υ.</b> στου Ε

α' 64,1.64,5. β' 64,3.51,8.

γ' 106,1.

Ľ	U	к	M	U	$_L$	Α	NO.	44	
_				_	1		_	_	

α	τα	νε DEF	λ: E		48,3.79,4.
β				<u>۔</u>	84,6.49,11
		<u> </u>			64,9
γ '				يي	64,4.
	l			E	

FORMULA NO. 45

α	ευς b	δο cde	ξαν d	17,10.
β	<u>-</u>			<b>97,</b> 9.

FORMULA NO. 40

	α	ξυ EF	λον ED	<b>3</b> ε C	φα D	νε F	<b>λ</b> ρω Ε	ən E
	β		İ	l			23	×~
-				1			Ε	EF

α' 64,2. β' 64,7. FORMULA NO. 46

βλυ	<b>Σ</b> στα d	νου a	σαν b	στερεας α				
27,5.97,2.								

FORMULA NO. 41

<u>_</u> ,,	3	20	2	سيد	ي
έν	φιλ	αν	θρω	πι	q.
EF	Е	D	CD	D	D

33,9.

FORMULA NO. 47

	133	77	
ε	ρα	σται	27,2.
Ъ	aG	a	

FORMULA NO. 48

	ευ	a.	عار و	ر	με •	ρον	28,5.
	1	G	аE	F	DE	E	

FORMULA NO. 42

α	<b>ε</b> Ε	πι Ε	γης Ε	حند DEF	E	
β			مر ب	<b>3</b> 0	ン	ڍ
			τον	αι	ω	να
			EF	D	EF	E

α' 33,5. β' 51,7. FORMULA NO. 49

α	) ac	3€	<del>:-</del> ۷۷	μη
	a	GF	Ga	a
β		133		
		GF		

α' 36,2.49,6.69,10.69,12.81,12 84,8.  $\beta'$  69,6.69,8.

FORMULA NO. 50

	ατε	หง้อ์บ G	a	ons G	27,7.	_
-					FORMULA NO. 5	1

A			48,11.51,8.79,5. 79,21.
:	η	μεις· F Ga baG	
Вα	απα	fous.	54,21.
	G N G	G a baGa G a	00.46
β		be	29,16. 37,14.
Υ	!	≯∍ b a	37,14.
Г	ÿ	δευ τε G c ba G G	103,6.
Δα		デュスクジグラス TAV TAV	29,14.34,1.34,12.
β	;	G FGa baGF G F ED	72,4.
Е		Pro vols. F EFGFEFG F ED	33,2.
Z	Suc.	ση με ρου· a b cba b GaGF G aF G a b c ba bG baG	68,1.
Н	707.7	φω στη ρα· a beba b G b aGF G F ED	72,1.
0	n	μων c db c ba c ba G	37,7.79,10.
I		κυρι ε. e ddc d ec d e cdb c eb c bac ba G ab	65,11.
к		EV ε λε ει· e ddcde dbcba	66,10
Λ		a b aaGFG b a F G EFD	88,11.
М	μεγας	c e fd f ed	65,10.

	F	RM	ULA		52
A α. β Υ	23	P R M y G G G G G	р Б	πρῶν aG	
	»	G	;;;	3.	
В	9	φυ G	λατ Β	των aG	
Γα	α	ρα G	με Gab	νη aG	
β		a	Gab		
Δα	0	a (e) e	τω b	ио aG	σμφ
ļ	£	a a			
Εα			ราการ วัน เก	θρο aG	νον
β	j	<b>-</b> ::(7	ā		
Υ			a		
δ		ь	a		
Z			(-) λυ G	μην aG	
Н		ио a	λι a	as G	

A'α'. 67,8.88,20.102,16. β'. 48,12.72,12.72,16.88,13.

γ'. 68,3.72,7.83,3.95,13. B'. 9,6.88,7.88,10. Γ'α'. 91,9.

β'. 84,16. Δ'α'. 36,6.79,8.79,16. β'. 88,5.91,11.91,12.

Εά. 33,4.

β'. 17,5.95,9.84,10.

γ΄. 81,17. δ΄. 14,2.24,8.

Z . 27,8.67,4.95,6.65,3. H . 29,17.54,4.

_		F	0	R	MU	LA	NO. 5	3
Α	α				χρι G	στος a		
	β					_	<b>J</b> a	
	Υ						ار میر	
	δ				<u>۔</u> Ga	الله الأر	<b>)</b> a	
	ε				G	Jita Jig	){ a	
	ζ				<u>.</u>		Ja	
	η				JG	ي: Ga	)∱a	
	₽				ia jo jo no	<b>J</b> G	Ja ka ja ja ja ja ja	a
В	α				χω	δω	νων	
	β				Ga	a	G.	<u>۔</u> ج
	Υ				<b>J</b> G	a	G G	J G - J G
	δ				J G (r	a a	G G G	
Г		σ	ευ	ρω	<b>с</b> тижац G	πυ a	<b>ຈ</b> λαι Ε	
4					ου δυ G	ns a	E S	

Α'α'. 69,15.

β'. 72,15.91,13.

γ'. 11,13. δ'. 37,9. ε'. 69,16. ζ'. 65,1.

η΄. 69,14

ð'. 50,7.

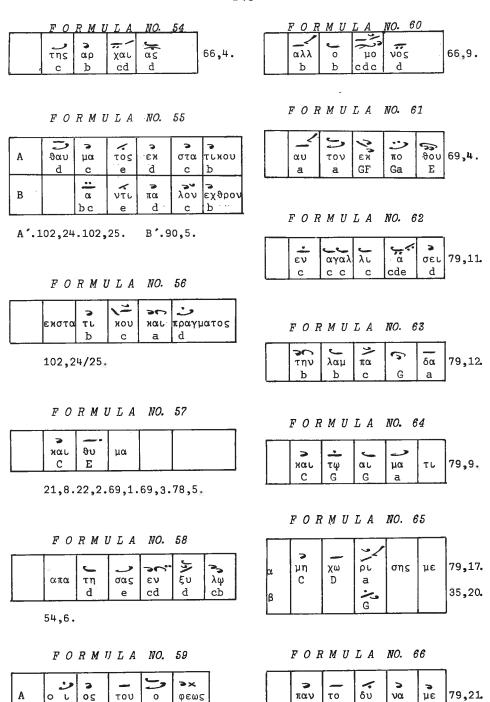
B'α'. 24,10.

β'. 106,3. γ'. 24,14.

δ'. 68,14.

Γ΄ . 36,1.79,16.

Δ' . 102,32.



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В

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ca b

54,13.

54,15.

G

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F

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E

D

79,21.

και η EDC D	μίν G	
----------------	----------	--

83,5.

## FORMULA NO. 70

α να δρα μων b c b c
-------------------------

55,10

### FORMULA NO. 68

>	3	٠	123	·	]
σε	τον	δι	αυ	την	51,8.
E	D	С	FED	F	]

FORMULA NO. 71

=	رر	×	
προς	θε	ω	ριας
е	е	a	

55,11.

### FORMULA NO. 69

EX b		μεθ	ισταμενον	103,9.
Ъ	cde	d		

FORMULA NO. 72

)X d	pu c	€ t G	
------	------	-------	--

11,4.

# TABLE OF THE MELODIES

## Interpretation:

In the following table each melody is represented by a series of numbers referring to its constituent formulas. The division of the melodies into lines has been retained. At the end of each line I have noted the kind of cadence formed, using the abbreviations explained on pp. 60-61.

Before the abbreviation for the cadence I have indicated the musical punctuation, and after it the grammatical punctuation.

Thus : •ClA EF • means

- a) at this point a leading-on cadence is formed on  ${\ensuremath{\mathtt{E}}}^F$  of the type A;
- b) there is a musical dot;
- c) there is a high point in the text.

Further conventions:

<del></del>	separates sections;
	separates colons;
10Ζα (Δα)	a red variant (10 $\Delta\alpha$ ) of the regular formula $10 Z\alpha$
	occurs above the latter;
(.)	the musical dot is not clearly discernible in the
	manuscript.

9

1 4	12Αα-11Βδ	.ClC	b ,
2	14Αγ-8Εβ	.CB	<u>G</u> _,
3 <b>ÿ</b>	9Εα-7Αα-16θα-1Εβ-4Ε	a.ClA	$EG \cdot$
4	10Δα-2θβ-33Α	.CB	G
5 <b>ÿ</b>	9Αα-7Αβ-16Ια-1Εε	.ClA	$E^F$ ,
6	-10Aa-11Aa	CC	b
	15Вβ-8Вβ	.CB	G .
7 <b>ÿ</b>	9Αα-8Γζ-	CIC	$G^{\alpha}$
8	-7Βα-16θα-1Εη-10Ββ-	.ClA	$ED_{\bullet}$
9 <b>ÿ</b>	-11Βα-15Βδ-8Βγ	.CB	G,
10 🧳	9Γε-8Γε	CIC	$G^{\alpha}$ ,
11	3A-1Aβ-10°β-	·ClA	E
12	-12Γδ-	CIC	$G^{\alpha}$
	-149-13Αγ	.ClB	<i>b</i> .
13	34Αα-11Βζ-15Αβ-2Αβ	.CB	G.
14 👸	9Αα-8Γζ	.cic	$G^{a}$
15	7Αα-16Κα-1Εα	:-CA	E .

1 π 16Δβ-27Αα .CC D  $17A\iota - 7A\alpha - 16H\gamma - 1\Delta\alpha$  . CA E , 3 📆 16Δβ-17Ζα-17Γα-8Ββ .CB G 9Γα-7Γ-16Μβ .CA E, 5 📆 16Ηβ-17Ζα-17Γγ-18Αα .*CB* 6 ÿ 52B-21-16Hα-17Ηγ-6Αγ .CB D , 8 유경 17Αε-10Ζγ-17Εδ CIC Ga, 7Aα-16Kα-1Eα :-CA E .

11Ε-15Δγ-29Αγ

9Z8-12E8

1Eα

15Αγ-13Εβ-30Βα

9Αα-7Αβ-16Ια

 $6 - 26A - 17\Delta \alpha - 7\Gamma - 16\Xi \alpha - 4E\gamma$ 

10Δα-12Γα

2Ηα\_\_\_\_

20-9Γα

1Eα

7Aβ-16Iα

9Ay-7Aa-16Zex

1 ÿ 🕒

2 ਜੇਪ੍ਹੇ

9 **ਪੰ** 

10

11

12

 $\cdot^{CB}$ 

.ClB

.CC

. CA

.CB

,CC CC

:-CA

(.)

	2
b ,	3
$\frac{b}{b^{\alpha}}$ , $\frac{c}{G}$	4
G	5
1	6
E ,	7
$\frac{E}{E^G}$	8
	g .
G	10
$\frac{G}{E^{\alpha}}$	11
a ,	12
	13
E	14

1 🚜 8θα-11Bδ-30A  $.Clc b^{\alpha}$  $9\Gamma\alpha-7A\alpha-16Z\alpha-17\theta\alpha$  , CC  $\alpha$  , .CA E7Aα-16θα-1Zβ 72-14Ζβ-13Εγ .ClB b  $34A\alpha-11B\zeta-15B\gamma-8B\gamma.CB$  G. ű .CC D 14Δ-6Γγ 17Bα-1Aα CAE $\frac{\partial \mathbf{r}}{\partial \mathbf{r}}$  16 $\Delta \alpha$  (16 $\Delta \gamma$ )-10 $\Delta \alpha$ -11 $\Delta \alpha$  *CC*  $\Delta r$ 13Bβ-2Aβ 9Αγ-7Γ-16Ξα-4Εγ .ClB  $E^G$ 10Δα-12B-4Γβ ,CB b , Αÿ 13BB-2AB\_\_\_\_ 9Γη-53Αγ-:-CA E . 3B-1Aα

11

14

1 ÿ	12Γα-15Βε	CC a
2	22 <b>A-1</b> 5Βε	CC $a$ ,
3	16 <b>08-1</b> Δβ	.CA E,
4 <b>T</b> y	17Н8-2ІВ	ClC Ga
5	3A-1Aa	.CA E ·
6 <del>11</del> 13	10Εβ-17Αδ-1Δη-10Βδ-	ClC ED
7	2Eα	.CB G ,
8 <b>ਪ੍ਰੰ</b>	3Г-19Кβ-1ЕВ	.CA E,
9 केंग्र	17Λα-33Α-2Αα	.CB G ,
10	9Αα-36α-19-4Βδ	.ClC a ·
11	8θγ-12Εδ	, CIC GX
12	7Aα-16θα-1Eα	:- CA E .

1 <b>y</b> 8	θα-12Εζ-9Ζη	CC	α,
2	36α-52Εδ-16Λα-1Γα	. CA	E
3 -:: 7	Βδ-10Ζβ-11Γα	·CC	b ,
4	23-15Βη-2Αα	• CB	$_{\it G}$ .
5 <b>ÿ</b>	9Αδ -7Βα-16Ζα-6Γβ-	-17Aŋ <i>C</i>	C a
6	7Γ-16Με	. CA	E
7 -::::1	5Βε-28-10Ζβ-4Αα	. CB	b ,
8 જેવું	26Β-17Γγ-18Αβ	. CB	G,
9 ÿ	9Αα-8Βα-11Γβ	CC	b
10	15Βγ-8Βγ	. CB	G ·
11 ÿ*	9Δε	. CC	а
12	7Aa-160a-1Za	: - CA	Ε.

13

34Ba-9Za-8Aa	. CB
9Εα-8Γζ	, ClC
3A-1Aa	. CA
10Εα-12Αα-30Ββ	ClC

:-CA E .

4 fiÿ	10Eα-12Aα-30Bβ		CIC	$b^{\alpha}$
5	9Εα-8Γζ	0	, ClC	Ga,
6	3A-1AB		. CA	E .
7 8	13Εα-13Βα		CC	Ъ
8	23-15Ββ-8Βγ		. CB	G
9 <b>y</b>	9Aa-36a-19-4B	5	. ClC	a ,
10	8θγ-12Εδ		CIC	$G^{\alpha}$

 $7A\alpha - 16\theta\alpha - 1E\alpha$ 

11

1	Àý~;		. CB	G
2	ÿ	9Αα-8Βα-24Βα	ClC	$G^{\alpha}$ ,
3		16θβ-1Δδ-	. ClA	$E^{\overline{F}}$ .
4		-10Αα-4Αβ	. CB	b
5		13Εα-13Γ-2Αα	. CB	G,
6	ÿ	9Αγ-3Ε-16Ιβ-1Εβ	·CA	E .
7	ñÿ	5Αα	CC	D ,
8		17Αα-18Ββ	. CB	G
9	ÿ	12Γγ	CLC	$G^{\alpha}$
10		-7Βα-16Κα-1Εα	: - CA	E .

1	ğ 8θβ-11Γα-15Bβ-8Zα		CIC	GO	ζ,
2	7Aα-16θα1Eη-10Bβ-		ClA		-
3	-11Γα-15Δα-8Γε		CIC	GO	τ
4	7Aα-16Ιε1Εα		CA	E	•
5			ClB	$E^{C}$	7
6	10Δα-2Ηβ	•	CB_	G	•
7	ÿ 9Aβ-34Aγ	_	$\overline{CC}$	a	_
8	7 <u>Αα-16</u> Ξβ-6Γγ	<u>.</u>	CB	D	و
9	8Ηα-9Αα-7Αβ-16Ιε-1Εα		CA	E	,
10	<del>້</del> ຶ່ 45α		CC	đ	
	13Εδ-34Γδ-13Εδ-34Γγ		ClB	b	,
11	12Γδ		CIC	$G^{C}$	ζ
	16θβ-1Γα :	_	CA	E	٠

			_
1 ÿ*	37-11Βγ	ClC b	,
2	15Εα-29Αβ	.ClB b	,
3	34Αα-9Γε-16Ηα-5Βα	.CB D	٠,
ӌҥ҇҈ӱ	17Aθ-38-7Bα-16θα		
5	1Ζβ-4Εα	. Cla E	G
6	10Ζα-11Αα	CC b	
7	13Γ-2Αα	.CB G	ا ع
8 ÿ	9Εδ-34Αβ-2Δβ	. CB G	٠
9 4	9Γε-7Αα-16θα-1Εα	, CA E	
10	<b>-</b> 7Αγ-10Ζβ-4Γα	.CB b	′ 4
11 <del>+</del> ÿ	13Γ-2Αβ	.CB G	
12 ỷ <sup>^</sup>	9Δα-7Γ-10Ζγ-	CIC $E$	,
13	17Εβ-7Βα-16θα-		
14	<b>1</b> Εα	:- CA E	

1 hg* 2	27B-5Aβ	.CC D	
2	17Αα-18Αβ	.CB G	
3 <b>ÿ</b>	3Ε-16Ιβ-1Εα	.CA E	·
4 7	28-10Zß-		
5	2Αβ	.CB G	
6 <b>ÿ</b>	9Βα-8Ζδ	$CIC$ $G^{a}$	
7	17Βα-1Βδ-32Α	. Cla $E^D$ ,	
8 !	57-5Aα	CC D	
9	17Βα-1Αε	. CLA $E^{F}$	
10 -	10Αα-4Αβ	CB b	Ī
11 ny	15Βδ-8Εα-33Α	CB $G$	, ]
12 <u>ÿ</u>	9Γα-7Αα-16Ζα	CC E	
13	6Αγ-17Αγ-18Δα	CC $G$	
14	15Bβ-8Bβ	.CB G	_
15 ชั	9Γα-7Αα-16Ζα	CC E	,
16	17θα-18Γα-33Α	.CB G	
17 <mark>Ÿ</mark>	7Γ-16Ξδ-6Αα	CC D	
18	17Βα-1Αα	:- CA E	•

1ñỷ	10Ζδ-17Αγ-18Δα-16Δγ-3	2A. ClB	$E_{s}^{D}$
2	57-5Aα	CC	D
3	36α-17Γδ-7Αδ-16Δγ	. CA	$E^{\bullet}$
4 <del>7</del> 73	16Δα-10Αα-11Αγ	CC	Ъ,
5	34Αα-2Ζβ	. CB	G.
6 <b>ÿ</b>	9Γε-28-10Ζβ-		
7	4Γβ	CB	<i>b</i> ,
8ជិប្ប័	23-15Bß-8Bß	. CB	$G_{oldsymbol{s}}$
9 <b>ÿ</b>	9Εα-8Γγ-8Δβ-	. CIC	а
10	9Αβ-34Αγ	, CC	а
11	-7Βδ-10Ζδ	CC	D
	17Ba-1Aa	: - CA	E .
I			

1 केयु	10Εγ	CC	E
	16Βα	CC	F
2	5 <u>A</u> α	.CB	D
3	17Ζβ-17Δα-9Εζ	CC	$\alpha$ ,
4	16θβ-1Δγ	• CA	$E^{\alpha}$ .
5722	28-2Bβ	. CB	G
6 <b>ÿ</b>	$9B\alpha-7A\alpha-16\theta\alpha-$		
7	1Δα	. CA	E ,
8 ftÿ*	16Δα(16Δγ) 10Αα-2Βα	.CB	G
9 ÿ	9Αα-16Ηα-5Αβ	.CB	D
10	10Εδ-17Ζβ-17Δγ	, ClC	Ga
11	17Βα-1Αα	:-CA	E .

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1 %	8θβ-11Γβ-15Εα	ClC	$b^G$
2	13Βα-15Βγ-8Ββ	. CB	G ·
3 <b>ਪੁੱ</b>	9Αβ-34Αγ	CC	а
4	2Aa	.CB	G ,
5 <b>ÿ</b>	9Βα-7Αβ-16Ιε-		
6	1Ea	. CA	E,
7 <b>ñ</b> ÿ	10Εα-12Αα-11Βε-15Βα	CIC	bc,
8	22A-52Eδ		
9	16Λα-1Δβ-4Εα	.ClA	$E^G$
10	10Ζα(10Δα)-53Βα-2Δγ	, ClC	Ga•
11	3A-1Aα	. CA	E •
12 mg	10Εα-12Αα-29Βα	.ClB	b
13	34Αα-9Γα	CC	α
	3A-1AB	. CA	E ,
1464	17Ηα-53Βγ-		
15	12E-9Zn	CC	α
16	7Aα+16 <b>9</b> α-1Zα	. CA	E .
17 77	17Λα-2Βα	. CB	G,
18 <b>ÿ</b>	11Ε-15Γ-8Βγ	,CB	G,
19	24Αα-2Αβ	.CB	G,
20 况	9Γδ- <b>8Ζ</b> ε	CIC	$G^{\alpha}$
21	-7Βα-16Κα-1Εα	: - CA	E .

# 

100		
1 4	10Δα-12Β-29Βγ	ClC b
2	14Αβ-13Εα-47	(.)CZC a ·
3	9Βδ-7Γ-16Μδ	CLC $\it E^{\it F}$
4	-10Αα-24Αα-2Αβ	• CB G ,
5 <b>ÿ</b>	11Ββ-46-17Βγ	
6	2Δα	$\cdot$ CB $G$
7 y	14E-33A-50	CC $G$
8	14Aa-52Z-35	· CB G ,
9. <b>ÿ</b>	9Αδ	CC a
10	-7Βα-16Ξβ-6Γγ	CC $D$
11	17Βα-1Αα	: - $CA$ $E$ .

1 4	7Γ-16Μδ-4Εβ	.ClB EG
2	10Ζα(10Δα)-2Ας	· CB G;
1		<u>-</u> -
з ў	9Γη-24Γ-2Ζα	. CB G ,
4 <b>ÿ</b>	9Bα-8Zα	CIC $G^{\alpha}$ ,
5	7F-16Ma-48	. CA E ·
6	6Αα-17Αγ-18Δβ	CB G
7 %	23-13Γ-2Αα	.CB G
8	9Βγ-7Αα-16Ζα	CC $E$
9	17Ζα-17Δδ	ClC Ga
10	7Γ-16Μζ	. CA E ,
11 <del>ñ</del> ÿ	6Αγ-17Αε	ClC Ga
12	3 <b>A-1</b> Aα	:- CA E .

	29			34	
1 ÿ	10Δα-11Αα	CC b	1 में दें	51Δα	· CB D
2	13Εδ-34Γβ	ClC Ga	2	9Εδ-8Γβ	$CIC G^{a}$ ,
3	14Αα-13Δα-30Α	·ClB ba	3	17Βα-1Ββ	· CA E ·
4	9Γα-7Γ-10Ζβ-		4 ti y 5	10Βγ-2Εβ	· CB G
5	2Βα	· CB G	5 ชี	9Γθ-2θα-16θζ	• CC a
6 <b>ÿ</b>	9Βα-8Γα	CIC Ca,	6	7Αβ-16Ια-1Εα	· CA E ·
7	8Αβ-9Γα-7Αα-16Κα-		7तिपु	17Ηδ-16Ιδ	ClC Ga
8	1Εε	$\cdot$ Cla $\mathit{E}^{F} \cdot$	8	7Γ-16Ξδ-21-16Ηα-	
9	-10Aa-4Aβ	• CB <b>b</b>	9	21-16Ηα-6Γβ	CC D
10 n̈̈ÿ	13Βα-15Αβ-2Αβ	$\cdot$ CB $G$ ,	10	16Ξε-6Αβ-16Ιζ	
11 Ÿ	12Εγ	CIC Ga	11	1Γδ-10Ββ-	· ClC $E^D$ ,
12	8Αβ-9Γε-		12	-51Δα (26B)	• CB D
13	3A-1AÇ-10Bβ-	· ClA ED·	1300	11Z-17Γα-8Zβ-33A	• CB G
14	-51Δα	CB D	14 👸	9Εα-8Γα	CIC Ga
15ỷ <sup>~</sup>	13Γ-2Αβ	· CB G ·	15	7Aa-16Ka	
16 <mark>ਪ</mark> ੍ਰੇ	9Αα-19-51Ββ	.ClB Gbç	16	<b>1</b> Εα	:- CA _ E .
17	34Γα-9Γε-52Η-16Λα-1	LΓα:- <i>CA E</i> .		35	
	33		1พี่หู้>	17An-1Hβ-	ClC $E^{\overline{F}}$
1 กินั	10Εγ	CC E	2	-10Βα-4Γβ	• CB b
2	10Βε-51E	·CC D	3 # 3	26B-17Γβ-2Aα-1.6N	$\gamma$ • Clb $G^F$ ,
3	10Εδ-17Βα-1Δγ	·CA Ea	4	17Ηβ-33Α-11Γς	CIC $Gb$
400	<b>ξ</b> 52Εα-16Λβ-16Δε	CC E	5	15Ββ-8Γε	ClC GA
5	42α-6Aβ	·CC D	6	7Αβ-16Ια-	
	17Βα-1Αα	· CA E ·	7	1Εα	· CA E ·
6 <del>h</del> y	6Αβ-17Αγ-18Δγ	CB G	8 - 4;	<del>ζ</del> 7Αγ-16Ξζ-10Βγ-	CIC $ED$
7 9	978-1698	• <u>CB</u> _ G	9	9Ζγ-17Γβ-8Δα-33Α	. <u>CB</u> <u>G</u>
8 🖁	9Γδ-7Αα-16Ζβ	CC E	10 4	7Βδ−16Δζ	ClC $\it E^{\it F}$
9	41	CC D	11	-10Γγ-17Αα-18Βγ	ClC Ga
10	17Βα-1Αβ-	$\cdot$ ClA $E$ $\cdot$	12	7Aα-16θα-1Zα	· CA E ·
11	-10Γβ-12Β-29Γ	CIC b	13	₹7Bδ-16Bβ-4Eβ	ClC EG
12	15Βγ-8Ββ	. <u>CB _ G</u>	14	10Δα-2Δβ	· CB G .
13 🔥	9Αα-7Αβ-16Ια-		15 งั	16Ny-35	CC $G$
14	12β	·CA E .	16	27Γ-2Βα	. CB G .
15 <del>n</del> y	17Κα-18Βα-33Α	CB $G$	17 4	9Εε-34Ββ	ClC Ga
16 <sup>3</sup>	9Ζγ-34Ββ	·ClC Ga,	18	24Αα-2Δβ	· CB G ,
17	3A-1Aα	:- CA E.	19 4	28-32B	$CIC$ $E^D$
			1 1		

 $65\beta\text{--}16\Lambda\alpha\text{--}1E\alpha$ 

:-CA E .

	00	
1#y	10Н-53Г-6Аβ-33В	•CB G
2 <b>ÿ</b>	9Εα-49α	,ClC a
3	3A-1A <sub>Y</sub>	·CA $E^{\alpha}$ .
45	<sub>7</sub> 7Βγ-10Ζβ-12Αβ <b>-</b>	
5	24BB-2AB(2F)	·CB G ,
6 ÿ	9Αα-52Δα-16Λα-	
7	1Γζ-	•ClA $E^F$ ,
8	-10Αα-4Αβ	·CB b
9 <del>ก</del> ินั	13Βα-15Αβ	
10	2Ια	·ClC Ga
11	7Aα-16Kα-1Eα	:-CA E .

1กินั	10Εγ-10Βγ-	CIC	ED
2	12Γβ-9Zη	CC	a
	3Α-1Αα	$\cdot CA$	E
3 ते 🍹	10Εα-12Αα-11Βδ	·CIC	b
4	11E-13F-2AB	$\cdot CB$	G
5 👸	9Γε-3Α	=	
6	1Вβ	• CA	E ,
6 7 hij	1Ββ 5Αα	• CA CC	
			D
7 तेयु	5Αα	CC	D G •
7 កិប៉្ 8	5Αα 11Γδ-15Ββ-8Βγ	CC •CB •CB	D G •

	07		
1 fiğ	10Εγ	CC	E
2	17 <del>0</del> β-18∆δ-6Αβ	CC	D
3	17Βα-1Αγ	•CA	Eα•
4	7Bγ-11Γϑ	CIC	$G^{\hat{D}}$
5	15Βγ-8Γε	CIC	Ga
6	3Α-1Αδ	•CA	$Eb^{\bullet}$
7 <b>ÿ</b> "	37-29∆-510	CC	G
8	14Αα-13Δα-30Α	•ClB	Ъа•
9	53Αδ-14Αα-13Δα-30Α	·ClB	Ъа
10	9Αα-8Γδ	·CIC	Gα
11	14Aa-33A	$\cdot CC$	G
12	9Εδ-34Αγ-2Δβ	•CB	G ,
13 <mark>ỷ</mark>	9 <b>A</b> α		
14	19-51Βγ	.CIC	а
15	14Δ-6Γβ	•CP	D
16	21-16Ηα-6Γβ	CC	D
17	7Aβ-16Ια-1Εα	:-CA	E .

1 ÿ	10Δα-12Γα-15Βε	·CC a
2	22A-8Eα-	
3	12E2	CIC Ga,
4	3Α-1Αα	·CA E ,
5 💥	-28-10Zβ(10Δα)-	·ClB E ,
6	11Βα	CC b
7	13Βα-15Αβ-2Αβ	$\cdot \mathit{CB}$ $G$ ,
8 %	9Αα-19-4Αδ	•CB b
9	15Ββ-8Ββ	·CB G
10 ij	9Γε-7Αα-16θα-	
11	1Ζα	·CA E ,
12 <del>ก</del> ็หู	17Λα	
13	16θγ-2Βα	∙CB G
14 ỷ	11Αα	CC b
15	15B6-8B6	·CB G ,
16 <b>ÿ</b>	12Δ-	ClC Ga
17	-7Bδ-16Mα-5Aα	•CB D
18	17Ζα-17Γγ-18Αγ-	CIC Ga
19	-7Βα-16θα-1Εα	:-CA E .

1 1 1 1	1040 054		~~	_	
19	16Δβ-27Αα	•	CC	D	
2	17Αθ-27Γ-17Βα-16Αγ	•	CA	E	•
3 नियु	17θβ-18Ε-10Ζδ-44α		CC	È	
4	6Αα-17Βα-16Αγ-		ClA	E	٠
5	-10Γα-12Γα-29Αα		CC	b	
	15Δβ-11Δ		CIC	b	,
6	15Βδ-8Βγ		СВ	G	•
7 ÿ°	9Δγ-7Αδ-10Ζγ-		CIC	E	
8	17Εε-7Βα-16Ζδ		CA	$E^{\zeta}$	ζ,
95	-15Bε-28-16Bα	•	CC	E	,
10	6Γα-17Αμ				
	3B-1Bß		CA	E	•
11 ñÿ	10Βζ-51Α		СВ	G	
12 ່ ່ ່	52Αβ-5Αα(5Ββ)		CC	D	
13	7Αα-16θα-1Εα	:-	CA	E	

1 Åÿ 2	5B-27A8		CC	D
2	6Αα-17Βα-1Αζ-10Ββ		ClA	$E^{D}$
3 -4	Βα	•	ClC	а
4	28-16Βα		CC	E
5	6Γα-17Αα-18Αα	•	СВ	G
6 <b>યે</b>	9Γζ-34Ββ		CIC	$G^{\alpha}$
7	53Αθ-2Δα	<u>.</u>	СВ	G
8 <b>ÿ</b>	7Γ-16Δβ-6Γα-			
9	17Aη-1Hα	:-	CA	E .
•				

1前2	17Αη-7Βδ-16Δς-4Εα		ClB	$E^G$	$\cdot$	_
2	10Δα-4Γβ					
3	13Вβ-2Аβ		CB	$G_{\perp}$	٠	
цÿ̈́	9Αα-7Αβ-16Ιε-					
5	1Εγ		CA	$E^{\alpha}$	,	
65	-15Βε-49α		CIC	α	,	
7	17Βα-1Αβ		CA	E	•	
g <del>n̂ v</del> j	6Bα-17Aι		CC	а		
9	3A-1AY		CA	$E^{\alpha}$	,	
10000		8Δ8				
11	6Αβ-44β		CA	E	و	
1244	17Ηε-16Αα		CC	E		
13	25A-6E		CC	D	,	
14	17Βα-1θ		CIC	$E^{G}$	٠.	
15	10Ζγ-17Αη-2Αγ		CB	G	_	
16 <sup>५</sup>	28-16Bß		CC	E		
17	6Γβ-17Βγ-1Γα	;-	CA	E	$\cdot$	
•						

1#4	25Α-27Αα	C	CC	D	
2	17Βα-1Δζ-10Γα-	. (	CZA	E	,
3	-28-10Zβ-	(.)	ZlΒ	Ë	•
4	-9Εδ-16 <del>9</del> δ	. (	CB	G	
5 <b>યે</b>	9Ζγ-17Γγ-18Αα	. (	CB	G	•
6 Ÿ	7Αδ-16Δε	(	CC	E	
7	16Δβ-42β	· (	CC	E	و
8	39ß	. (	CC	E	
	68-51A,	(	CB	G	_
94	9Γα-8Γζ		CIC	GC	Z
10	3Α-1Αα	. (	CA	E	
11 <sup>ñ</sup> ÿ	5Αα	(	CC	D	
12	3 <b>A-1A</b> α	. (	CA	E	•
1343	16Βγ-4Εβ	(	CIC	$E^{(}$	ī
14	10Δα-11Αα	(	CC	Ъ	,
15	15Ββ-8Γα	(	CIC	G	χ
16	3A-1Aa	:-	CA	E	

7Γ-16Mα-5Bα

1 👸	11Γε-20-29Αα-30Α	ClB	ba,	5	Àğ	17Αα-18Ββ	• CB	G ,
2	9Εα-8Βα-11Γγ	CIC	$G^{b}$	6	ij	9Вв-34Вв	CIC	Ga
	13Г-2АВ	• CB	G,	7	·	7Aα-16θα-1Zα	• CA	E .
3 <b>ÿ</b>	9Αδ	, CC	а	8	ÿ"	34Ββ	CIC	Gа
4	52Η-16Λα-1Γα	• CA	E •	9	١	-140-13Αβ	• <i>ÇB</i>	b ,
5 กิชั	10Εα-12Αα-11Βδ	CIC	Ъ	10	नेगुँ	13Βα(23)-70-4Δ	·CC	đ
6	1016-58	CC	Ъ	11		71-14Αα-13Δβ	(.)CZE	3b,
7	15Αβ-2Αα	• CB	G,	12	2	12Αγ	CC	G
8 <b>ÿ</b>	9Βα-19-4Ββ	· ClC	a	13	3	9Γη-24Αβ-2Αα	$(.)_{CB}$	G
9	7Βα-16Ζα-6Γβ	• CB	D,	14	ÿ	9Γη	ClC	Ga
10	17Ζβ-17Δα-9Ζζ	CC	a	15	5	7Αα-16Κα-1Εα	:-CA	Ε.
11	7Αα-16θα-1Εδ	• CA	Eb•			56		
12 <b>3</b> °	8θα-11Βα-15Αδ-	· ClC	b		ÿ	12Αα-11Βε-15Βα-	ClC	bc
13	59A			2	2	14Β-13Εε-34Γβ	$\cdot CIC$	$G\alpha$ ,
14	14Αα-13Δα-15Αδ-	. ClB	<i>b</i> .	3	}	14Γ-13Αγ	$\cdot ClB$	b ,
15	59B	• C1B	b	4	ŀ	34Aα-9Zβ-9Zδ	CC	а
16	9Γα-19-4Ββ	. ClC	a	5	5	3Α-1Αα	•CA	<i>E</i> •
17	7Γ-16Μδ-10Γβ	CIC	E	6		26Α-17Δα-7Γ-16Ξζ-10	B <b>Y •</b> ClB	$E^D$
18	17Αε-7Γ-16Με	• CA	E •	7	7	9Ζγ-17Γβ-8Δγ	•CB	G,
19 <b>A</b> ÿ	10Εα-12Αα-			ع   ا	3 ÿ	9Γα-19-4Ββ	·ClC	a
20	14H-13Δα-30Α	• ClB	$b^a$ ,	واا	9	7Βα-16Ξβ-6Γβ	$\bullet CB$	D •
21	9Βα-19-51Βα	· ClC	а	10	àğ	17Εα-18Γα-33Α	CC	G
22	12Εα-9Εζ-16θβ(16Λο	ε)-		11	L	15Γ-8Βγ	(.)CB	G,
23	1F8	• CA	E .	12	2 ÿ	9Αα-16Ηα-5Αα(5Ββ)	CC	D
24 <b>∛</b>	15Αα-14Αα-13Δγ-30Βα	ClB	bα,	13	3	3 <b>A</b> -1Aα	•CA	E .
25	9Εα-8Γβ	CIC	$G^{\alpha}$	14	-	26Α-17Δα-7Γ-10Ζβ-		
26	9Βα-8Βγ	• CB	G,	15	5	2Ζδ	•CB	G
27 <b>ÿ</b>	9Γα-8Γα	CIC	$G^{\alpha}$	16	S ij	9Αα-19-4Ββ	·CIC	а
28	7Αβ- <b>1</b> 6Ιε			17	7	7Αα-16Ξβ-6Γβ	•CB	D
29	1Ea	:- CA	E .	18	àğ	17Εα-18Γβ	ClC	Gα
				19	3	3A-1An	·CA	$EG^{\bullet}$
	55			20	ጋቭያሩ	16Δγ-10Η-		
1 yr	8θα-11Βδ	ClC	b	2:	L	2Ζγ	$\bullet CB$	G .
2	36α-7Γ-10Zβ-	. ClB	$E_{-}$	22	2 👸 🖰	9Δγ-8Γγ-8Δβ-	CIC	a ,
3	9Ββ-34Ββ	ClC	Ga			9Γε	,CC	ъ,
1				l i				

. CB D

:-CA E .

3A-1Aα

1 ÿ 2 ÿ	12Αα-11Η	. CB b
2 <b>y</b>	23	,
3	34Ββ	CIC G <sup>a</sup>
4	13Δγ-30Βα	. ClB ba·
5	12Γβ-9Ζε	CC a
6	2Αβ	. CB G ,
7 <b>ÿ</b>	9Γη-9Ζδ	CC a
8	3 <b>A-1</b> Aα	:- CA E .

# 

1 hỷ	39α		CC	E
2	40a		CA	E .
3 ਜੇਪ੍ਹੇ	39β		CC	E
4	17θβ-18Δδ-6Αβ-44γ	•	CA	E,
5 <del>n</del> ÿ	39a		CC	E
6	10Eα-28-16E		CC	$\boldsymbol{E}$
7	40ß-		ClA	$E^{D\bullet}$
8	-10Βα-4Ββ		CIC	α
9	7Αδ-16Ξγ-6Αβ-44β		CA	E ,
10កិប្បី	6Γα-17Aι		CC	а
11	3A-1Aβ		CA	$\boldsymbol{E}$ .
12 <del>ຖື</del> ່ນ	5Αα(5Ββ)		CC	D
13	17Βα-1Αα	:-	CA	E .

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1 ก็ปู้	10Εα-53Αζ-7Αε-16Να	·-	CB	E
2 ÿ*	15Εγ-2Αβ		CB	G,
3	9Δδ-52Z	VESTON.		
4	5Αα-17Αη		CC	a ,
5	3Α-1Αγ	•	CA	$E^{\alpha}$
65	7Αγ-16Ξζ-10Βγ-4Γβ	_:	СВ	b
7 <b>ት</b> 战	13Γ-2Δβ	_:	СВ	$G_{-}$
8 <b>ÿ</b>	9Αβ-11Δ		CIC	Ъ
9	3A-1AB		CA	E .

10 ឫ <sup>၄</sup>	15Αε-51M	
11	511	.ClB $G^{b}$ ,
12	30A-11Bδ	ClC b
13	3A-1Aa	:-CA E .

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	66	
าห์งู้>	100-16Нδ	.CB E
2 ກີ່ນຶ່	6Aγ-17Aθ-7Aβ-16Id	$lpha$ -1E $\epsilon$ . ${\it ClA}$ ${\it E}^{\it F}$ ,
3 -	10Αα-4Αβ	.CB b
4 <b>ភិ</b> ប៉ូ	54	CIC b
	14Αδ-13Αγ	ClB b
5	9Εδ-16θβ-1Δγ	.CA Ea
67	7Αδ-16Δδ-10Βδ-	.ClB $E^D$ ,
7	-12Γα-15Βζ-2Δα	.CB G ,
8 <b>ÿ</b>	9Γη-9Ζδ	CC a
	3A-1AB	.CA E .
9 ÿ°	60-4∆	.CC d
10	51K	.CC a
11	9Βγ-7Αα-16Ζβ	.CA E ,
12 <del>f</del> iÿ	17Ζα-17Δβ-24Βγ	.ClC Ga,
13	7Aα-16θα-1Eα	:-Ca E .

1 Ry	27B-	ClB	$E^F$ ,
2	-10Αα-9Εε-34Ββ	CIC	Gα,
3	16θβ-1Δα	.CA	E ,
4 fiÿ	10Eα-9Eδ-52Z		
5	16Λα-1Γβ	.CA	E ,
6 កិប្ប	21-16Ηα-6Γα	.CC	D ,
7	17Αθ-18Γα-33Α	CB	G
8 ÿ́^	52Aa-17I	CC	α,
9	7Γ-16Με	:-CA	E .

	68			
1	#51Z	<u>.</u> • •	CB G	
2 👸	2Δα	<u>.</u> .	CB G	
3 👸	12Εα-52Αγ			
4	5Aα(5Bβ)		CB D	_2
5	17Ζβ−17Δε		CIC G	α
6	7Αα-16Κα-1Εα		CA E	
7 80	22Β-2Δβ		CB G	_ 2
8 <b>ÿ</b>	9Αα-19-4Ββ	•	ClC a	
9	3Α-1Αε-		ClA E	$F_{oldsymbol{s}}$
10	-10Αα-4Αβ		CB b	
11	15Αα-14Αα-13Δβ	_ : .	ClB b	
12	34Aa-9Ay-8Za		CIC G	a
13	7Αβ-16Ια-1Εγ		CA E	a•
14 ლ	<b>∵</b> 7Βδ-53Αβ(Βδ)-2Αβ(Ββ	).	CB G	
15 <b>ÿ</b> "	9Δγ-16Ηα-5Δ	•	CC $E$	٠,
16	10Βζ-17Αα-18Ββ		CB G	
17 <b>ÿ</b>	9Αα-19-4Βδ	•	ClC a	
18	3Ζ-16Ιβ-1Εα	:-	CA E	

	72		
1 Aye	-, 51H	.CB	D
2 👸	9Ζγ-17Γγ-18Αζ	CIC	Gа,
3	7Αα-16Κα-1Ζ <b>γ-</b> 10Ββ <i>-</i>	.ClA	$E^{D^{\bullet}}$
4	-51Δβ	• CB	D
5	21-16Ηα-6Γβ	CC	D
6	17Αβ-17Γα-8Ββ	.CB	$G_{\mathfrak{s}}$
7 강	9Γη-52Αγ		
8	6Вβ	CIC	$D^{\alpha}$
9	7Aα-16θα-1Εβ-4Εα	. ClA	$E^G$
10	10Ζα(10Δα)-4Γβ	CB	b
11	15Г-8Вβ	• CB	G
12 <b>ỷ</b>	52Aβ-5Aβ(5Bα)	· CC	D
13	10Εδ-17Εα-7Γ-16Με	• CA	E •
14	7Aε-16Nα-4Eβ	CIC	$E^{G}$
15	10Ζα(10Δα)-53Αβ-2Α	x.CB	G,
16 <b>ў</b>	52Αβ-16Ηε-10Αα-	ClC	$E^{\overline{F}}$
17	2θβ-16θε	.clc	a ,
18	7Αα-16θα-1Εα	: - CA	E .

hy2	57-5Aβ		CC	D
2	17A9-28-32B		ClB	$E_{m{s}}^{D}$
3	57-5Aα(5Bβ)		CC	D
4	61-10Γα-			
5	16Κγ-1Εα	•	CA	$E_{\bullet}$
6 ਜੇ ਪੁੱ	9Εδ-49β		CIC	а
7	17Βα-1Γα	•	CA	$E^{\bullet}$
8 😲	9Εδ-49β		ClC	а
9	17Ββ-16Αγ	•	CA	$E^{\bullet}$
10 <del>ก</del> ผู้	6Bα-17Aϑ-49α		CIC	$\alpha$ ,
11	17Вβ-16Аβ		CA	$E^{\bullet}$
12	6Bα-17Aθ-49α		CIC	$a_{s}$
13	17Ββ-16Αβ		CA	E
14 ሕኝ	17Λα-53Αη		CC	а
15	53Aα-2Aα(2Bα)	:	CB_	G'
16 <b>ÿ</b>	53Αε		CC	α
17	17Bα-1Aα	:-	CA	E.

1 <del>h</del> ÿ	10Εβ-17Εβ-7Βδ		
2	16Δζ-4Εα	. ClB	$E^{G}$
3	10Δβ-17Εβ-7Βδ		
4	16Δγ-32Α	. ClA	$E^{D}$ ,
5	57-5Aα	CC	D
6	17Βα-1Δβ-4Εα	. ClA	$E^G$
7	10Δα-11Αβ	CC	Ъ
8	13Ββ-2Δα	. CB	<u>G</u> .
9 🖔	<b>9Γη</b> -24Αγ	ClC	$Ga_{s}$
10	7Γ-16Mα-5Aα	• CB	D
11	17Εγ-18Αε	ClC	Gа,
12	7Γ-16Mδ-	. ClA	$E^F$ ,
13	-10Αα-11Αα	CC	Ъ
14	23-15Αβ-2Αβ	. CB	G,
15 <b>ਪ੍ਰੋ</b>	9Αγ-8Ζδ	ClC	$G^{\alpha}$ ,
16	7Αα-16Κα-1Εα	:- CA	$\boldsymbol{E}$ .

	79						
1 ñÿ	25A-27Aα	• CC	D	16 <b>ÿ</b>	9Αα-8Βα-24Βα-8Δβ-	CIC	а
2	17Αι-28-16Βα	CC	E	17	9Aα-52Eγ		
3	6A6-17A6-18E		ĺ	18	16Λα-1Γα	: -CA	$E_{\bullet}$
4	10Ζδ-44α-10Γα-	· ClA	E ,		83		
5 -	-12Γα-9Γα-6Δα-51Α	CC	G	194	25A-27Aα	CC	D
6	2Αα	• CB	G	2	7Aα-16θα-1Eγ	CA	ΕĠ
7 <b>ÿ</b>	9Εα-8Γα	CIC	Ga	39	<sup>2</sup> 8Zγ−52Aγ		
8	52Δα-16Γβ-1Γα-32Α	· ClB	$E^D$ ,	4	5Aß	.CB	$D_{\bullet}$
9	64-16Ιγ-1Εδ	• CA	$E^{b}$ ,	5	67-16Λα-9Ζζ	CC	ā
10 <b>५</b> %	37-294-510	• CB	G	6	3A-1Aα	:-CA	$E_{\bullet}$
11 🔫	62	CC	đ. ,		84		
12	63-2AB	• CB	$_{G}$ $\cdot  $	1fiğ=	17Αγ-16Ηδ	•CB	$E_{\bullet}$
13 🚜	9Γδ-7Αα-16Ηγ-6Δα	CC .	D	29	15Δα-16Ηα-		
14	17Aa-18Ba-33A	• CB	G	3	5Αβ	•CB	$D_{\bullet}^{\bullet}$
15 <b>ÿ</b>	9Εα-8Γα	CIC	Ga	цfiğ	17Αβ-17Γα-8Βγ	•CB	Ğ•
16	52Δα-16Λβ-53Γ-32Α	· ClA	$E^{D}$	5 <b>ÿ</b>	9Εα-8Γβ	CIC	Ga
17	65α-17Δβ-4Βδ	· CIC	$\alpha$ ,	6	6Δβ-17Αδ-18Ε-10Ζδ-4	4β. <i>CA</i>	$E_{\bullet}$
18	7Αα-16θα-1Εα	· CA	E	7	-28-10Bγ-	CIC	$E^D$
19	26A-17Гβ-7B8-16Bβ	• CB	E	8	2θβ-49α	CIC	а
20 <b>ຄື</b> ່ຢູ່	17Λβ-1Δε-32Α	CIC	$E^{\widetilde{D}}$ ,	9	3A-1Aa	${}_{\bullet}CA$	$E^{\bullet}$
21	66-51A	. CC	G	10	<del>5</del> 52Εβ-16Λα-16Δγ	.CC	E,
22	1Ηα	:-CA	E	11	6Γα-17Αα-18Αα	${ullet} CB$	$G^{ullet}$
	81			12 🚜	9Γα-8Ζε-	ClC	$\bar{G}_{m{s}}^{m{a}}$
1 9 *	8θα-9Γα-			13	-7Βα-16Κα-1Εε-	·ClA	$E^{F}$
2	7Αα-16Ζβ	· CC	E	14	-10Αα-1Δθ	•ClB	$E^{\overline{F}}$
3	18Δβ	CB	G,	15	-10Αα-9Ζγ-17Γγ-18Αβ	.CB	$\bar{G}_{\bullet}$
44	23-15Ββ-9Ββ	. CB	G	164	9Δγ-8Βα-52Γβ	**************************************	
5 👸	9Γς-34Αγ	CC	a	17	5Αα	<b>.</b> CB	$D_{\bullet}$
6	7Aα-16θα-1Eα	· CA	E ,	18ຄືອ	17Ζβ-17Δγ	CIC	$\bar{G}^{\bar{\alpha}}$
74::	26Α-17Γβ-7Βδ-16Ξη-10	Вγ		19	3A-1Ae-	•ClA	$E^{F_{\bullet}}$
8	2Εβ	• CB	G	20	-10Αα-4Αγ	CB	b
9 <b>¾</b>	9Αα-19-4Βγ	.cic	a ,	21	15Βγ-8Βγ	CC	$\bar{G}$
10	17A3-7F-16Mn	. CA	Ea∙	22	9Γα-3Α-1Αα	•CA	E.
110:::	₹ 7Βδ-16Ξη-10Βγ-	CIC	$E^D$	23	₹15Bε-28 <b>-</b> 2Bβ	•CB	G,
12	28a-49a	.ClC	a	24 🖔	14Δ-6Γβ	.CB	$\bar{D}$
13	17Εα-7Γ-16Μγ	.CA	Ea•	25	17Αα-18Αβ	•CB	$\bar{G}$
	7Αδ-16Δδ-10Βδ	ClC	$E^D$	26	9Γζ-34Αγ	CC	
147	. \WO_TOVO_TODO	000			319 3 1111		

160	7Αε-16Νβ 8-8	ClC	$E^{F}$	1 [	1 80	31-7F-10ZB-			
2	26Α-17Γα-8Ββ	. CB	G		2	2Δα		CB	G,
3 <b>ÿ</b>	9Εε-34Βγ	<del>c</del> īc	-Gα,	$  \  $	3 <b>ÿ</b>	9Βα-8Βα-24Αγ		ClC	
4	17Βα-1Αγ	. CA	Еα		4	8Αβ-9Αα-7Αα-16θα			
5 🦡	<u>π</u> 52Δβ-16Λα-16Δε	. CC	Ε.	1	5	1Εα		CA	E •
6	6Αγ-17Αα-18Αα	. CB	G,		6 💥	<b>.</b> 28		CC	G
7 👸	52Β-16Λα-1Δγ	· CA	Eα·	11	7	15Γ-8Βγ		СВ	G
8 📆	<b>₹</b> 7Bδ		'	1	8 <b>ў</b> 1	9Δγ-7Αα-16Ζα		CC	Ε,
9	16Ξη-10Βγ-2Ββ	(.)CB	G		9	6Γα-52Γα			
10 🛂	52Β-16Λα-1Γγ	. CA	Eα·	1	.0	16Λα-1Δα		CA	$E^{\bullet}$
11	51Λ-	. ClB	$E^{D}$	1	15;;	₹52Δβ-16Λα-16Δγ		СВ	E ,
12	-10Bγ-2Bα	. CB	G	]  1	.2	52Δβ-16Λα-10H-		-	ė.
13 🖁	52Αβ-16Ηε-6Αβ		D,	1	.3	53Αβ-2Αβ	•	СВ	G ,
14	17Αα-18Αδ	CIC	Gа,	1	4 <b>4</b> °	9Δε-7Βα-16Ζα-6Γβ		СВ	D
15	16θβ-1Γβ-4Εα	. CIA	$EG^{\bullet}$	1	.5 <b>ਜੇ</b> 3ੂੰ	17Ζβ-17Δα-9Εα		CC	α
16	10Δα-4Γβ	. CB	b	1	.6	3A-1Aa	•	CA	E .
17 <b>4</b> ÿ	15F-8BB		G,	1	7	≈28-16E		CC	E
18 🤴	9Γη-12Εβ	CC	G	1	.8	13Γ-2Αα		CB	G ,
19	15Bβ-8Bβ	. CB	G	1	9 <b>ÿ</b>	9Αα-8Βα-24Αδ	•	ClC	Gα
20 🐝	52Αα-5Αβ	. CB	D	2	0	9Bα-8Bβ	275) <b></b> .	СВ	G
21 ਜਿੱਥੂੰ	17Αα-18Αα	. CB	G	2	1 ÿ	9Αα-8Γα		CIC	Ga
22 👸	9Αα-19-4Ββ	CIC	α	2	2	7 <b>Α</b> β-16Ιε-1 <b>Ε</b> α	:-	CA	E .
23	27Γ-17Βα-1Αα	:- CA	E .						
	90			_		92			
1 ÿ"	31-7Γ-10Ζβ-	CIC	E		1 4	12Αα-11Βε-15Βα-		CIC	bc
2	2Αα	. CB	G,		2	14Αγ-8Εβ	<b>:</b> -	CB_	$G_{\underline{g}}$
3	9Γα-8Γζ	CIC	Ga		3 <b>ÿ</b>	9Εα-366-17Γδ-7Γ-1	6M∂.	CC	E ,
4	3Α-1Αδ	. CA	$E_{p}$ .		4	17Ha-20a-33A		CB_	$G_{\underline{g}}$
5 🖖	34Δα-11Γι-15Αδ-55Β-	-30AClB	Ъа		5 <b>ÿ</b>	9Aα-38-7Bα-16θα-			
6-	9Αα-7Αβ-16Ια-1Εβ	. CA	E ,		6	1Zβ		CA	E ,
7 ก็ผู้	5Aα	CC	$D_{\bullet}$		7 8	43-9By-20		<u>CB</u> _	G.
	17Αε-7Γ-16Μδ-	. ClA	<i>E</i> ₱•		8 <b>ỷ</b>	9Ba-36a-38-7Ba-16	Κα-		
8	-10Αα-4Αβ	. CB	h	-	9	1Εβ	•	CA	$E_{\mathbf{s}}$
9	15Αβ-2Αα	. CB	G,	1	o <sub>กิ</sub> ง	5Aα	•	CC	D
10 🖁	9Γα-8Γα	CLC	Ga	L		17Βα-1Βγ-	•	CLA	$EF^{\bullet}$
11	7Γ-16Μα-5Βγ	. ClB	ра	1	1	-10 <u>Α</u> α-4 <u>Α</u> γ		<u>CB</u> _	<i>b</i>
12	20-9Γγ	CC	a	1	2	13Βα-15Ββ-8Γζ-		CIC	$G^{\alpha}$ ,
13	3A-1Ba	:- CA	E .	1	3	-7Ba-16Ka-1Ea	:-	CA	E .

	95					102	<u> </u>	
ทิง	10Εβ-17Αζ	CIC	α		1 ÿ"	8θβ-11Γβ-15Εα	CIC	$b^G$ ,
	7Γ-16Ξζ-10Βγ	. ClB	ED		2	9Γι-7Αδ-10Ζβ-	.ClB	E,
2	9Ζγ-17Γγ-18Αε	CIC	$G^{\alpha}$		3	-11Ε-15Βγ-8Γβ	.CIC	$G^{\alpha}$ ,
3	-7Βα-16Κα-1Εβ-10Γβ	. ClA	<i>E</i> •	ĺ	4	7Αδ-16Δγ	.CC	E
4	-17Αδ-1Δα	. CB	E		5	17Ζα-17Γδ	CIC	$G^{\alpha}$
5หินั	17Ζα-17Γγ-18Αβ	. CB	G,		6	7Αα-16Ζζ-4Εα	.ClA	$E^G$ ,
6	9Δβ-8Ζγ-52Ζ				7	10Ζα(10Δα)-11Αβ	CC	Ъ
7	17Ηγ-6Αα	CC	D		8	15Γ-8Γζ	CIC	Gα,
8	17Βα-1Βα	. CA	E ,		9	7Γ-10Ζε	CIC	$D^{a}$ ,
9	₹52Eβ-16Λα-10H-	. ClB	E		10	7Αα-16θα-1Εδ	.CA	${\it Eb}$ $^{ullet}$
10	2Αβ	. CB	G .		11 🥳	34Δβ-11Γγ-13Βγ-8Εγ-2	Δα.CB	G ,
11 🖔	9Γη-8Ηβ	. cic	a ,		12 <b>∛</b>	11Βη-9Ζη-8Ζγ-9Εγ	.cc	a ,
12	9Ζγ-17Γα-8Δα-33Α	. CB	G ,		13	15Εβ-7Βα-16Ζα-6Γγ	•CB	D,
13 <b>រ៉ូ</b>	9Γα-52Αγ				14 <del>ñ</del> ÿ	17Αβ-17Γα-8Γε	cīc	Gа
14	21-16Ηα-6Γδ	CIC	$D^{\alpha}$		15	16θβ-1Γα	.CA	E,
15	20-9Γγ <del>-</del>				16 <b>ў</b> "	52Aα-12Eη-11E	CC	b
16	-3B-1Aα	:- CA	Ε.		17	15Βγ-8Γα	CIC	Gа
	97	_			18	7Γ-16Mδ-	.ClA	$E^{F^{\bullet}}$
1 4,6	37-15Αγ-14Ι-13Αα	. CC	b		19	-10Αα-17Ζβ-17Γβ-2θα-3	3A.CB	G ,
2	46-17Γα-2Αα	. CB	G,		20 <mark>ÿ</mark>	9Γδ-7Αα-16Ζα	CC	Ε,
3 <b>ÿ</b>	9Αγ-8Ζε	CIC	$G^{a}$ ,		21	10Ζγ-17Λγ-4Βγ	CLC	а
4	7 <b>Α</b> α-16 <b>Κ</b> α-1Εβ-4 <b>Ε</b> α	. ClA	$EG_{\bullet}$		22	17Αε-7Γ-16Μα-10Ββ-	CLA	$E^D$ .
5	10Δα-11Αα	CC	b		23	-4Αβ	$\cdot^{CB}$	b
6	13Γ-2Αα	. CB	G,		24 <b>Àÿ</b> °	55A-	·cic	ЪС,
7 👸	9Βα-8Βα-24Βα	CIC	Ga		25	-56-55A-30A	.ClB	ba!
8	7Aβ-16Ιε-1Εε-	. ClA	$EF^{\bullet}$		26	9Γα-8Γζ	CIC	Ga
9	-10Aa-12B-45B	CC	đ		27	7Αδ-6Δα	CC	D
10	15Αβ-2Αβ	. CB	G,		28	17Βα-1Γε-	.ClA	$EG_{\bullet}$
11 🥳	9Δε-38-7Βα-16Ξβ-61	rs. CC	D,		29	-33Γ-16Γ-17Ζα-17Δβ-11	rn.ClC	Gb
12_	7Aα-16Kα-1Eα	. CA	Ε.		30	15Δα-8Γβ	CIC	
13 <del>ก</del> ็ชุ๊	10Ζβ-11Αα	CC	b		31	17Εδ-7Αδ-16Δγ	.CA	E •
14	13Г-2АВ	. CB	G,		32 <del>À</del> ỷ′	53Δ-6Γβ-17Εα <b>-1</b> 6θε	CIC	а
15 <b>ỷ</b>	9Γα-3Δ-16Κβ-				33	7Aβ-16Ια-1Εα	: _CA	E .
16	1Εα	:- CA	E .					
				· I	_			

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1 <b>y</b>	10Δα-12Β-29Ββ	· ClB b ,
2	15Δα-3Α-1Αβ-4Εα	· ClA EG,
3	10Δα-11Αα-4Ζ	· ClB bd,
4	10Ia-22A	CC b
5	13Γ-2Αα	· CB G ,
6 <b>ÿ</b>	51Γ-4Ββ	$\cdot$ ClC $a$ ,
7	7Βα-16Ζα-6Γδ	CIC Da,
8	7Αα-16Κα-1Εα	· CA E ,
9 4	69-8Ea	· CC G ,
10	13Γ-2Αβ	· CB G
11 <b>ÿ</b>	9Αγ-7Γ-10Ζγ-	ClC E
12	17Ζβ-17Δα-9Ζζ	CC a
13	3 <b>A-1Aβ-4</b> Eα	• ClA EG•
14	10Δα-11Αβ	сс ъ
15	13Г-2АВ	· CB G ,
16 ÿ"	9Δγ-19-4Ββ	· ClC a ,
17	7Αα-16Ζα-6Γδ	· ClC Da,
18	20-3Α-1Αα	:- CA E .

1ÿ°	34Ba-9Za-8Aa	• CB	G,
2 👸	9Αβ-14Ζα-13Αγ	. ClB	b ,
3	34Αα-9Αα-19-4Αε	· CB	b
4	13Γ-2Αβ	. CB	G,
5	9Γβ-9Zδ	. CC	α,
6	3A-1Aα	:- CA	E .

## 

1 hỷ	39γ	•	CC	E ,
2	10Εβ-17Εδ-7Αα-16Ζγ		ClB	$E^{F}$
3	-10Αα-53Ββ-2Αα		CB	G,
4 🖁	14Δ-6Γβ		CC	D
5	26Α-17Γδ-7Αδ-16Δγ		CA	E
6 113	17H6-33A		CB	G
73%	13Γ-29α-33Α	•	СВ	G,
8 <b>ਪੁੱ</b>	9Εα-8Γα	•	сіс	Ga
9	7Γ-16Μγ	•	CA	E .

10 fry	5Γγ-	ClC EF
11	-10Αγ-7Γ-16Μδ-	-Cla $E^F$ ,
12	10Αα-11Αα	CC b
13	13Г-2АВ	-CB G ,
14 <b>ÿ</b>	7 <b>Г-1</b> 6Е6-6Аβ	·CB D .
15 📆	17A9-20a-33A	• CB G
16 <b>4</b>	9Γα-8Ζε-	ClC Ga
17	-7Ba-16Ka-1Ea	:- <i>CA E</i> .

## 

กัน	7Αδ-10Ζβ(10Δα)-11Αβ	CC	Ъ
2	13Γ-2Αβ	.CB	G;
зÿ	9Αα-8Γα	CIC	Gα
4	7Αα-16Κα-1Εζ-	.ClA	ED;
5	-10Βα-12Β-4Γγ	CB	b
6	13Γ-2Αα	.CB	G,
74	9Αβ-34Ββ	CIC	Gα
8	2Δα	.CB	G,
9	9Εβ-34Αβ-2Αα	.CB	G,
10	9Βα-38-7Ββ-16Ιε.1Ζ	a:- C	A E.

1-:::	27Γ-17Ax-		
2	-3B-1Bα	.CC	E
3	5Γβ-17Βα-1Δζ	.CA	E ,
4 <b>A</b> Ÿ	17Κβ-6Γβ	CC	D
5	17Βα-1Βα	.CA	E ,
66	<b>26A-1</b> 7Γδ	CIC	Ga
	7Αδ-16Δε	.CB	E ,
7	"26A-17Γδ	cīc	Ga
~``	7Αδ-16Δγ	.CA	E .
8	17Ζα-17Γα-8Βγ	СВ	G
9 🖔	3Γ-16Κβ-1Εα	.CA	$E_{\bullet}$
1044	5Γα-	ClC	Da
11	-7Βα-16Κα-1Εα	:- CA	E .

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